Drug and Cosmetic Industry

September 1956 Vol. 79 No. 3

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"Salchmo sends me, so I have to take a tranquilizer or disgrace myself."

Keeping Posted

Hydrocortisone Controversy

Protests against the proposed exemption of certain hydrocortisone preparations from prescription-dispensing requirements were formally presented by the American Pharmaceutical Association and the American College of Apothecaries at a hearing held in Washington by the Food and Drug Administration.

Dr. Linwood Tice, representing the ACA, took the position that to give these products an over-the-counter status would "constitute a serious hazard to public health." The APA statement asserted that "in the best interest of the public health the drugs under consideration should remain in the prescription classification.

The proposal to permit over-the-counter sales resulted from efforts by a dozen manufacturers of hydrocortisone ointment to have their effective new drug applications amended on the grounds that scientific data indicates that the drug is safe for topical use against minor infections.

Land of the Rising (Chemical) Sun

Japanese chemical industries are expanding at an average rate of fifteen per cent a year as compared with a ten per cent increase for the U. S., according to Dr. Robert S. Aries, chemical engineer and head of the New York consulting firm of R. S. Aries & Associates. Dr. Aries has recently returned from a trip to Japan where he went at the invitation of Japanese chemical manufacturers for a study of the technical and economic aspects of chemical expansion.

Because of increased domestic consumption and exports, Japanese production of pharmaceuticals in 1955 gained 34.5 per cent over 1954. Synthetic textiles rose 23.6 per cent; petroleum products, 17.7 per cent; and basic chemicals, 11.3 per cent.

In 1956, the Japanese will produce about 300 million dollars worth of pharmaceuticals, of which less than four per cent are exported. Dr. Aries is of the opinion that Japan is the world's cheapest producer of vitamins, which account for 43 per cent of its exports.

Fair Trade Counterattack Plan

Nine legal and economic specialists recommend seeking new legislation to overcome adverse decisions on fair trade by high state courts and have drafted new legislative proposals as an initial move toward this end, according to the "Newsletter" of the Bureau of Education on Fair Trade.

The nine specialists, states the "Newsletter," at a recent closed meeting sponsored by the Bureau, came to the following conclusions:

"1. New legislation to overcome court decisions should be sought from state legislatures.

"2. It is premature to turn to Congress for a Federal law which would effectively overcome the damage wrought by adverse decisions.

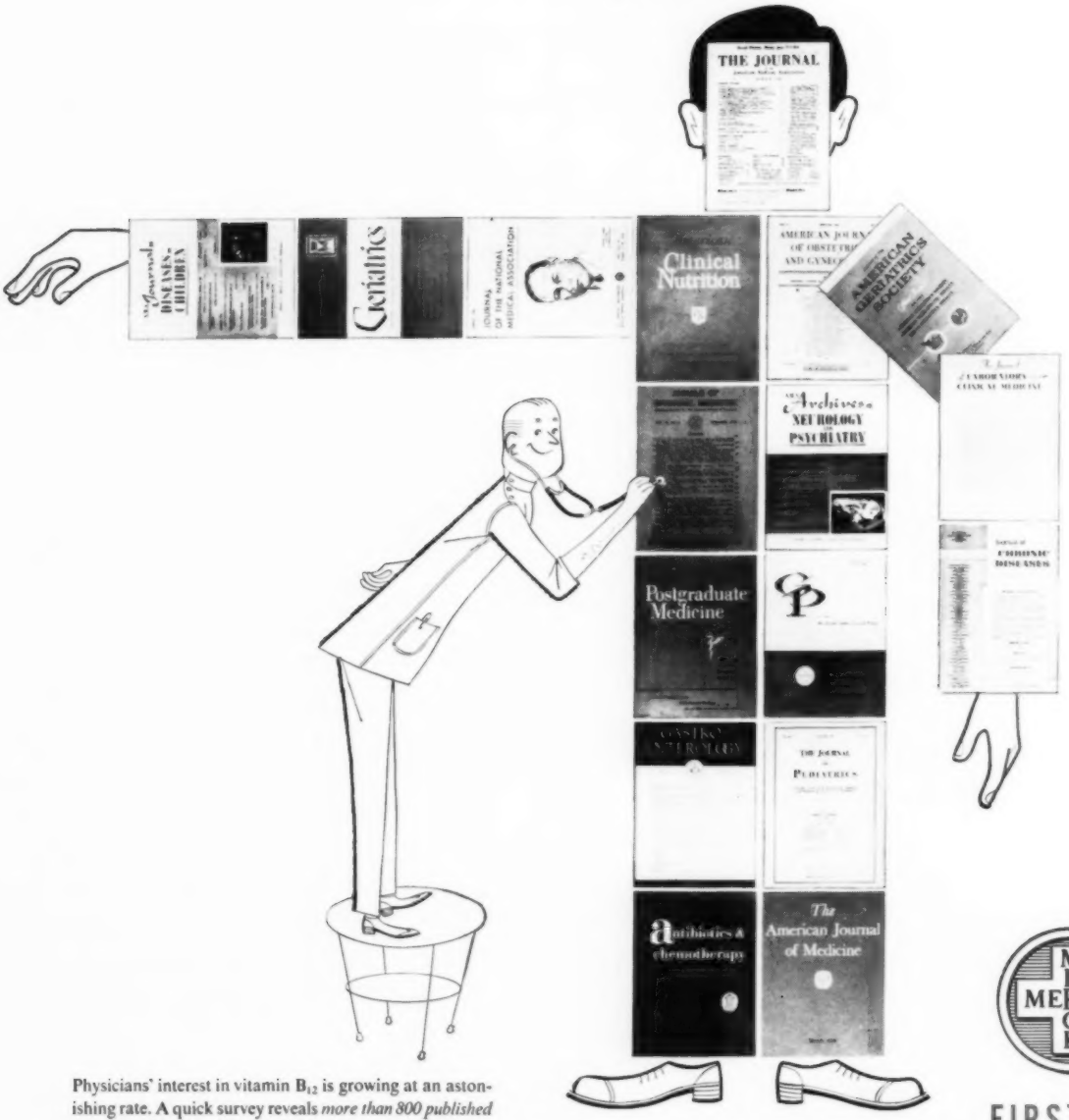
"3. In considering legal arguments in behalf of the trademark protection which the fair trade laws provide, some courts have failed to realize the trademark's function in fostering the preservation of small business, furthering competition and preventing retail monopoly, an exercise of state police power which the lawyers hold is entirely within the power of the state legislature.

"4. Fair trade has been caught in a cross-fire of contention between the state courts and the United States Supreme Court on the one hand, and the courts and legislatures on the other."

The new legislative proposals will be intensively researched, with respect to relevant state and Federal laws and brought to the attention of lawmakers in a number of states before they are made public, according to the "Newsletter."

Two state courts, one in New Mexico and one in Colorado, have upheld the constitutionality of their

No wonder the B_{12} market is growing



Physicians' interest in vitamin B_{12} is growing at an astonishing rate. A quick survey reveals *more than 800 published reports on B_{12}** in 1954 and 1955—almost twice as many as those on vitamin C, which is B_{12}'s nearest vitamin competitor in the literature.

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respective state fair trade laws, the Bureau has reported.

The latest Colorado decision takes a view directly opposed to the earlier adverse ruling by another Colorado state court whose decision in the case of Olin Mathieson Chemical Corp. v. Francis has been appealed to Colorado's supreme court. The New Mexico opinion pointed out that the majority of the state supreme courts which have ruled on fair trade laws have upheld these state acts.

A Newark drug company has been permanently restrained from selling products of Eli Lilly and Company below minimum fair-trade prices.

A court injunction was obtained against the F & M Drug Company after it violated minimum retail prices on Lilly Insulin products set under the New Jersey Fair Trade Act.

Couderchet Reports on Flower Oil Crops

Back from a two-month trip to Europe where he spent several weeks in Grasse at the headquarters of Charabot & Cie, Maurice Couderchet, president of Charabot & Co., Inc., New York, reports that the processing of jasmin started late this year and that the price paid for the flower is higher than last year. The rose crop was abundant and prices are somewhat lower.

The lavandin crop will be plentiful, and it is estimated that this year's production will reach 400 tons. But lavender will be short again, he predicted, perhaps 25 to 30 per cent less than last year. There is an increasing demand for lavender and prices should rise. Few bitter orange trees survived last Winter's freeze. As an indication of the damage wrought by the most severe cold wave to strike France during a generation, Mr. Couderchet explained that bitter orange trees in some of the gardens surrounding the Charabot plant normally yield 30 to 35 kilos of blossoms. This year one tree had one branch with two blossoms on it; the remainder were dead.

Mr. Couderchet has also reported that the capital of Charabot & Cie recently was increased to 200 million francs.

British Tetracycline Patent to Pfizer

A basic product patent on the antibiotic, tetracycline, has been granted in Great Britain to Pfizer Corporation, a wholly owned subsidiary of Chas. Pfizer & Co., Inc., it has been announced.

The patent covers tetracycline and its salts, as well as pharmaceutical and veterinary preparations containing the antibiotic or its salts. It also covers a process for the production of tetracycline by catalytic hydrogenation of chlortetracycline. The patent extends Pfizer's basic protection on tetracycline to England, Scotland, Wales, Northern Ireland and the Isle of Man, and to the numerous British colonies and possessions where the British patent can be registered. With the grant of its British patent, Pfizer now has basic patents on tetracycline in the major countries throughout the world.

NARD Gives $10,000 to NHI

A $10,000 contribution from the National Association of Retail Druggists to help support the Health News Institute over the next 12 months, with an indication that the size of the contribution may be increased in succeeding years, has been announced by Kenneth F. Valentine, president of Pitman-Moore, Inc., and chairman of the Institute's finance committee.

Mr. Valentine said the NARD gift brings to five the number of trade groups and associations in the health field now actively supporting the Institute.

Prescription Drugs

In an analysis of 3,012 prescriptions filled from January 1, 1955 to March 31, 1955 by thirteen drug stores, the College of Pharmacy, University of New Mexico, Albuquerque, through Drug Standards (May-June 1956) shows the following frequencies for various products which we have culled from the long list:

Achremycin	77	Nembutal	30
Aureomycin	36	Neo-Cortef	18
Benadryl	68	Pabalate	13
Bicillin	36	Panmycin	17
Chloromycetin	39	Penicillin	45
Chlortrimeton	56	Phenobarbital	45
Coricidin	57	Premarin	44
Dexamyl	12	Probanthine	18
Dexadrine	25	Pyribenzamine	26
Diamox	12	Robitussin	23
Donnatol	49	Seconal	25
Dramamine	29	Serpasil	31
Ephedrine with Codeine	22	Steclin	20
		Terramycin	95
Erythrocin	27	Tetracycline	4
Gantrisin	71	Tetracyn	56
Hydrocortone	16	Thorazine	61
Ilotycin	38		

Hits Tranquilizer Wide Use

The American Psychiatric Association has taken a formal stand against the wide public use of tranquilizing drugs to combat everyday tensions. A statement was prepared by the committees on research, therapy, and public information of the association deploring the widespread use of the tranquilizing drugs "as medicines for the relief of everyday tensions," and this has been mailed to the 9,353 members of the association.

The statement recognizes the effectiveness of the tranquilizers in making disturbed patients in mental hospitals more easily treated. It acknowledges that these drugs are "useful adjuncts in the psychiatric treatment of certain patients in private practice and on an outpatient basis in clinics and hospitals." But it warns that casual use of tranquilizers by the public to relieve tension "is medically unsound and constitutes a public danger."

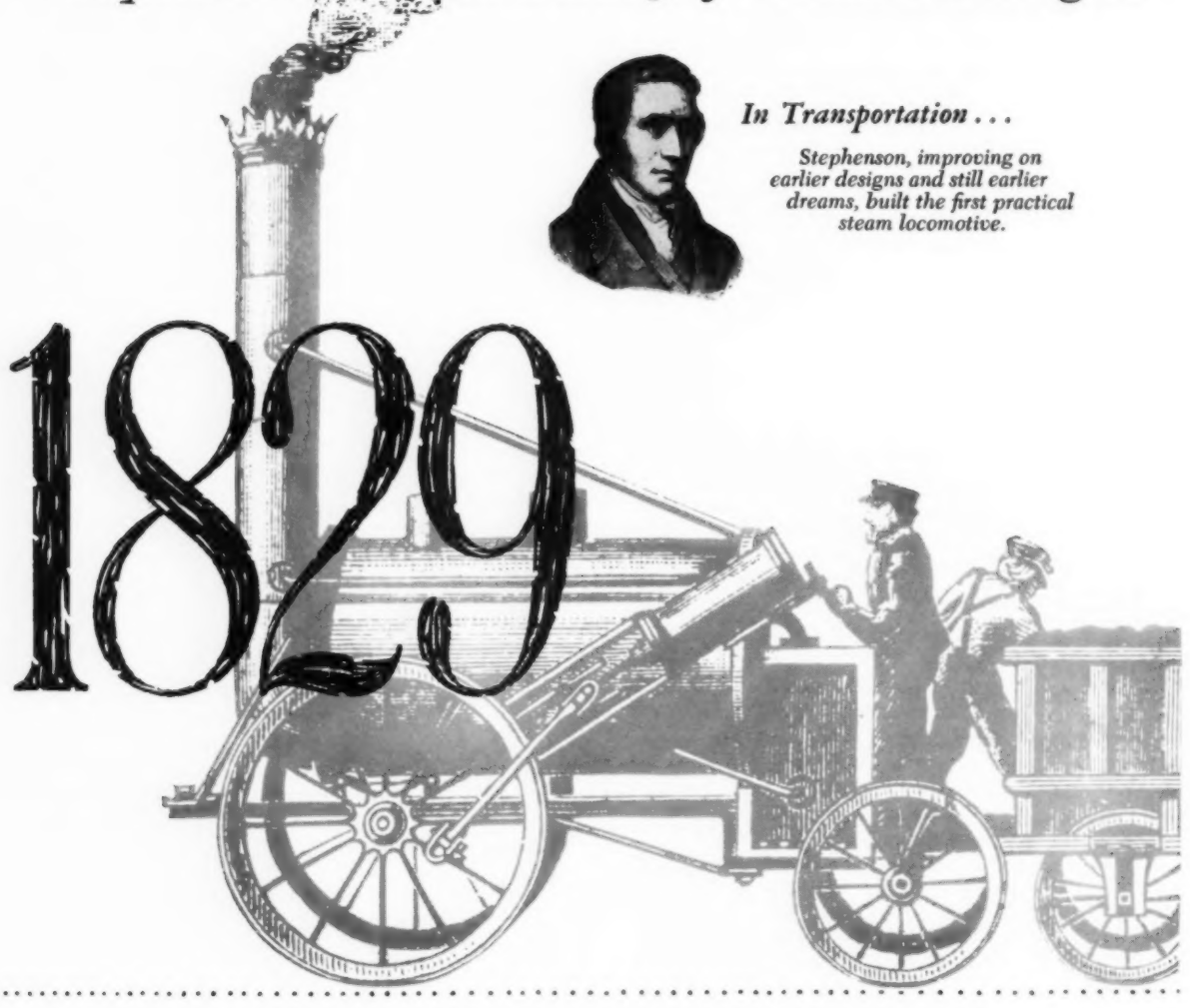
Obtainable only on prescription, these drugs are being used in the entertainment—largely television—to induce a relaxed appearance; by persons high in the

Important dates in the History of Industrial Progress

In Transportation . . .

Stephenson, improving on earlier designs and still earlier dreams, built the first practical steam locomotive.

1829



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Titre	26° – 29° C.
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commercial world; by lawyers facing difficult court trials; and by harried housewives. The psychiatric association estimates that some 35 million prescriptions for these drugs will be written in 1956. The association also estimates that three out of ten compounds prescribed most frequently in 1955 were tranquilizers.

The report warns that "The tranquilizing drugs have not been in use long enough to determine the full range, duration and medical significance of their side effects. Use of these drugs is no more to be encouraged than use of any other drug except where proper medical diagnosis determines that a drug is indicated to maintain the life and functioning of a person. The prescribing of the drugs for emotional illnesses carries with it an obligation for continuing appraisal and supervision by physicians fully aware of the psychiatric symptoms involved and the potentials of their course of development, alteration or remission."

While stating that full accumulation of tested scientific data concerning the drugs is vital, the report emphasized that it "recognized with enthusiasm" the development of tranquilizers for treating psychiatric disorders.

Drugs and Mental Disease

Pointing out that the idea that mental ailments may have chemical roots is not a new one, Dr. John H. Biel, chief, medicinal chemistry division, Lakeside Laboratories, said that "except for a handful of pioneers who were interested in the physiologic picture of the psychotic state," a "general apathy was shared by the medicinal chemist who usually became quite unhappy when any of his antispasmodic or adrenolytic compounds showed central 'side effects' of stimulation or sedation."

Four events have sparked the new trend in psychiatric thinking, according to Dr. Biel:

1. Discovery of two drugs which "tranquilize" without hypnosis or cortical depression and with their site of action in the hypothalmus.

2. Isolation of serotonin, followed by the theory that it is essential for normal brain function and that mental disease may thus reflect an imbalance of this metabolite.

3. Confirmation of the theory that serotonin is implicated in brain function as a neurohumoral agent.

4. Development of a theory concerning the mode of action of reserpine and chloropromazine which ties in well with the neuropharmacological concept of the etiology of neurosis.

Mead Johnson Parenterals

Mead Johnson & Company, who formed a Parenteral Products Division in early 1953 and introduced a complete line of intravenous solutions that Fall, announces a general expansion of the division as a further step toward divisional autonomy and company decentralization. To handle the division's growing sales volume, Orville P. Nuffer, Parenteral Products vice-president and general manager, has named as general sales manager Rhoades Alderson, former field sales manager, and as appliance development manager Raymond W. Barton. Mr. Barton will be responsible for research and development work on parenteral administration equipment.

Mr. Alderson, who moves from the position of eastern field sales manager, and with the Company since 1954, worked for Cutter Laboratories as a representative from 1946 to 1953, when he joined Fenwal Laboratories from which he went to Mead Johnson. Mr. Barton joined Mead Johnson in 1929, working Summers while he attended Purdue University from which he graduated in 1933 as a chemical engineer. He worked on development of the Company's first parenterals equipment after the development of Amigen in 1943 and has been engaged in that type of work since.

Medicinal, Perfume, Flavor Imports

Imports of para aminosalicylate and its calcium and sodium salts for 1955 totaled 518,303 pounds for 1955, compared with 312,907 pounds for 1954, according to the U.S. Tariff Commission. Imports for 1955 were made up of 119,686 pounds of the acid, 38,956 pounds of the calcium salt, and 359,661 pounds of the sodium salt. Imports for 1954 were made up of 43,388 pounds of the acid, 24,029 pounds of the calcium salt, and 245,490 pounds of the sodium salt.

Imports of Butazolidine increased from 20,505 in 1954, to 24,505 pounds in 1955, an increase of about 25 per cent.

Glycol monosalicylate, which was not reported in the 1954 tabulation, was imported in 1955 to the extent of 12,662 pounds. This is a sunscreen chemical.

Benzocaine imports jumped from 800 pounds in 1954 to 5,500 pounds in 1955.

Antipyrine imports doubled from 21,575 pounds in 1954 to 41,130 pounds in 1955.

Isonicotinic acid hydrazide shot up from 1,849 pounds in 1954 to 14,009 pounds in 1955.

Among the imports of perfume and flavor materials we find: coumarin for 1955 12,067 pounds, for 1954 2,906 pounds; musk xylol for 1955 61,148 pounds, for 1954 16,106 pounds; saccharin for 1955, insoluble 67,017 pounds, soluble 34,441, a 1955 total of 101,458 pounds, against 73,420 pounds for 1954; vanillin for 1955 103,432 pounds, for 1954 74,687 pounds; musk ambrette for 1955 19,073 pounds, for 1954 4,772 pounds.

Pricing Prescriptions

In a survey, based on prescription costing, pricing and operational data obtained from 57,660 actual prescriptions collected from more than 400 representative drug stores covering all sections of the United States, it is revealed that more than half of the prescriptions (55.1 per cent) were dispensed at a substantial dollars and cents loss. Prices charged by pharmacists on another 40 per cent were shown to be computed at close to the break-even point, whereas prices on high ingredient-cost prescriptions were on the high side. In a report on this survey, conducted by Professor

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S. B. Jeffries and Professor I. Greenberg, of the Department of Pharmacy Administration of the Brooklyn College of Pharmacy, and summarized in the Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association, the national average prescription price is shown to be $2.36 and the median only $1.41—which means that one-half of the prescriptions filled were dispensed at less than $1.41.

Claiming that the prescription is, by any standard, the biggest health bargain the public has enjoyed, the report states that public criticism as well as social and economic pressure is most intense on a small group of high-priced "catastrophic" type prescriptions which actually constitute no more than four to six per cent of all prescriptions dispensed.

The report concludes that pharmacists through more realistic costing and pricing procedures can effectively reduce anti-pharmacy criticisms and social pressure and improve their professional economic position by holding prices on the fewer high-priced prescriptions to a more reasonable level while at the same time increasing to a more profitable level the prices on the substantially larger number of low-cost ingredient prescriptions.

New Stillbirth Drug

Announcing a new drug based on raw materials which are available only to the extent of one-tenth the amount needed for estimated cases, is one thing. However, in announcing Releasin—a drug that is expected to permit the saving of seven out of ten infants threatened with stillbirth, Warner-Chilcott Laboratories also plainly states that the cost to the hospitalized patient will be in the range of $150 to $175 for the course of treatment. The drug, which halts premature labor in many cases, is obtained from pregnant sow ovaries. Quantities of raw materials are limited, and up to 200 pairs of pregnant sow ovaries are needed for a course of treatment for just one patient. With an estimated 200,000 such cases occurring in the United States each year, the seventy per cent effectiveness of this drug means that anticipated supplies will save 14,000 of these infants each year. The company states that while they would like to supply trial supplies to doctors requesting them, "such an offer is impossible because of extremely limited supplies. In fairness to everyone, therefore, no sample material will be available."

Pointing out that "best results . . . are obtained when premature labor occurs in the 29th to 36th week," the company says Releasin "is too valuable a therapeutic agent to waste on inevitable immature or premature labor wherein the factors of advanced cervical dilation or extreme favorability are present."

Scientist Shortage Looms

The nation faces a shortage of 457,000 scientists and engineers by 1965, and the chemical industry alone will have a "probable shortage" of 93,000 scientists and engineers within that time, according to an independent study conducted by the Manufacturing Chemists Association. The estimates are based on estimated industry growth over the next decade as well as the anticipated number of scientists and engineers who will receive bachelor-level degrees through 1965. The study shows that at present there are 884,000 scientists and engineers employed in the United States. Of this number 713,000 are in industry, with 77,000, an 8.7 per cent of the national total, employed in the chemical and allied products industries. By 1965 it is anticipated that the supply of scientists and engineers will increase to 1,223,000 but that 1,680,000 will be needed, leaving an overall shortage of 457,000. The chemical industry will probably be able to employ no more than 106,000, but will need 199,000 and will face a shortage of 93,000 scientists and engineers unless the supply is substantially increased.

Unless more young people take up scientific and technical careers it is likely that industrial expansion will "slow down to a walk, a crawl, or stop," Glen Perry, of E. I. du Pont de Nemours & Company, said.

Atomic Medical Research Center

Construction has started on this country's first Atomic Energy Commission Medical Research Center containing a nuclear reactor designed specifically for medical research and therapy. The one-story medical center will be part of the Brookhaven National Laboratory at Upton, Long Island, N. Y. It will cover 2.7 acres of an 11-acre site, will house research laboratories for medical physics, pathology, microbiology, biochemistry, and physiology, plus a 48-bed research hospital, and an industrial medicine branch for Brookhaven personnel. A central facility will provide general laboratory and hospital services. The entire medical research center, including the reactor, is scheduled for completion in 1958 at a cost of $6 million exclusive of design and engineering.

Family Succession

We read on all hands lately of the dangers of nepotism. Nepotism, by definition in Webster's New International Dictionary is "favoritism shown to nephews and other relatives; bestowal of patronage by reason of relationship rather than of merit."

Quite often, the word is applied indiscriminately. Upon learning that the founder of a business has been succeeded by a relative, many people, apparently blind to even the possibility of there being any merit in such a succession, can see only the relationship. The results of family succession in this industry offer striking exceptions to the nepotism stereotype.

As a few examples that come to mind we point out Henry Bristol, Lee Bristol, and William Bristol Jr., who have brought Bristol-Myers a long way from where it was in their father's day. We might also cite here that the third generation, well qualified, is helping the company to go still further.

John G. Searle, president of G. D. Searle & Co., has certainly brought G. D. Searle to a point not dreamt of when his father was alive, and his father had brought the company quite a ways from where it was

in his father's day. Jack Searle has sons in the company and you can just bet your bottom dollar that they are well qualified to carry on.

Still another example is the Mennen Company, in which case the two sons of William Mennen are hanging up new records for the company constantly. And their father, William G. Mennen, certainly brought this company a long distance from where it was when his father, Gerhard Mennen, brought it before his death.

George Schultz, president of Shulton, Inc., is still another example of a son of founding father who has greatly expanded the business in which he took over control on his father's death, and he is still very much on the move.

R. Lincoln McNeil, forced into practical retirement by his health last year has turned the management of McNeil Laboratories over to his two sons, Robert and Henry. Anyone who thinks that these two boys aren't qualified just don't know the score. Already things are perking real loud under the new management.

Two further examples that come to mind are in the supply field. One is Percy C. Magnus, who took over at the age of twenty-one when his father died, to be later joined by his brothers, Joseph B. and Robert B. Magnus. This firm has certainly grown to great stature since the day of P. C. Magnus, Sr.

The other one is S. B. Penick & Company, which is rising to new heights under the direction of two sons of the founder, S. B. Penick Jr. and Albert D. Penick.

The 50th Anniversary

Speaking for the cosmetic industry at the recent commemoration of the fiftieth anniversary of food and laws, H. Gregory Thomas, president of Chanel, Inc. pointed out that "only about 200 cases had been brought against the whole field of cosmetics in the past eighteen years,"—or since cosmetics were included in the law. "During this same period our industry has grown from a volume of 412 million dollars in 1938 to well over a billion dollars last year," said Mr. Thomas, who added, "In all this time, there has been no important adverse effect on the public health arising from the production and sale of any of the products under the Act."

Speaking for the drug industry, Harry J. Loynd, president of Parke, Davis & Company, said that "government and industry have come to have a better understanding of each other's problems; have discovered that equally high ideals of the quality of medicines are pursued by both alike; have found that attainment of these ideals comes more quickly by mutual help than by dictatorial compulsion or obstinate resistance, and have realized that frank discussion of differences of opinion may lead to clearer thinking and better conclusions."

Speaking for the food and drug chemical industry, John T. Connor, president of Merck & Co., said:

"That process of modification of our basic legal structure to retain necessary flexibility and to allow for desirable growth is fundamental to our whole way of life in this country. It is traditional in our democracy that we have a government of laws—not of men. It is essential, therefore, that the laws should change with the times so that they may continue to be administered for the common good. Many people deplore these changes, preferring to think that we should call a halt to the legislative process and live indefinitely with the laws we already have. That viewpoint seems particularly unrealistic in a field such as ours where scientific research brings about so many changes in our food and drug products, and in the processes for making them. We in industry and government who are concerned with the proper administration of these laws for the benefit of the general public must be willing to accept justified legislative changes in the laws. Specifically, we should expect to see the addition of new controls required by new conditions, as well as the deletion of controls no longer needed."

Motion Picture Award

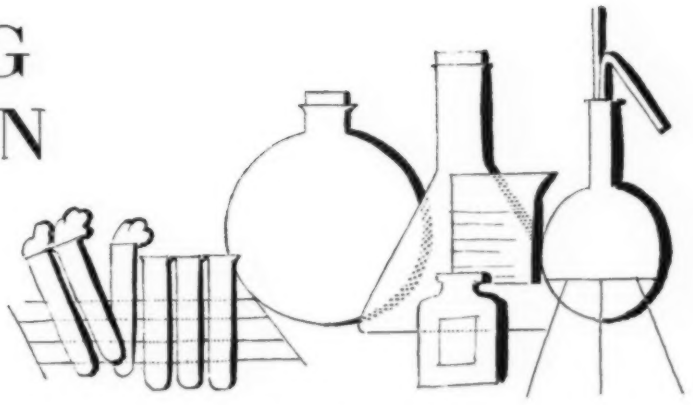
For the second consecutive year a Pfizer Laboratories motion picture was recently chosen for First Award in the Medical and Nursing Competition at the Cleveland Film Festival. The top award winner, Dynamics of the Tubercule, is a 16 mm. sound-color teaching film detailing the pathology of tuberculosis as observed in living tissue. Singled out for the Festival's Certificate of Merit was another Pfizer Laboratories film, Still Going Places, a study of active management of disability in the aged. Both were produced under the supervision of Dr. Leo M. Leveridge, director of the Medical Film Department of Pfizer Laboratories. At last year's Cleveland Festival, The Bronchopulmonary Segments, a Pfizer Laboratories film, won first award in its category.

Dolcin and F.T.C.

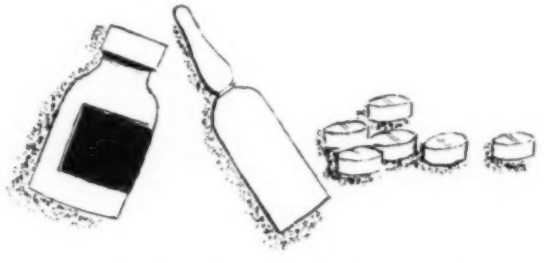
Dolcin Corporation, which has been in difficulties with the Federal Trade Commission for some time over advertising claims, is now the subject of an F.T.C. complaint regarding promotional allowances and restraint of trade. The Commission claims that Dolcin has entered into agreements restricting their right to negotiate freely with Doldin's competitors, and gives favored treatment to some of its customers.

It seems that Dolcin's X-CON contracts gives the retailers who have them, a five per cent promotional allowance in return for performing certain services. These retailers are required (1) to pay push money on the sale of Dolcin to their clerks, at their own expense, at the same rate it is paid to these clerks by Dolcin's competitors, and (2) to refrain from cooperative advertising with any Dolcin competitor unless the cooperative program of the competitor is offered to all other retailers in the same trading area. The result of the first of these two restrictions, according to the Commission, is that the retailer is reluctant to permit Dolcin's competitors to pay push money to clerks, especially since Dolcin's sales are twice that of the nearest competitor. The second restriction, charges the Commission, discourages these retailers from entering into cooperative advertising arrangements with Dolcin's competitors.

BROADENING COMPETITION



The tendency of manufacturers in this industry to engage in all branches of the industry, rather than to confine their efforts to one of the branches is broadening considerably. Manufacturers of proprietary drugs, of pharmaceutical specialties, and of cosmetic preparations are, in an increasing number of instances, moving into one another's fields. Cosmetic manufacturers are casting their eyes toward the proprietary drug field as they come up with preparations that fit into the category of drug products. Proprietary manufacturers continue to look for ways to gain a foothold in the pharmaceutical branch of the industry which is the largest and fastest growing branch. Further than this, a number of pharmaceutical manufacturers



are not overlooking the possibility of promoting some of their products in a proprietary fashion, which means through advertising direct to the public. This has been done for some time by companies which have set up proprietary subsidiaries, but some manufacturers are thinking of using their own names in this proprietary marketing.

Such a method of approach has its advantages and its disadvantages. The advantage that attracts them to the idea is the fact that the name of the company going direct to the public with an over-the-counter product is that the public will become well acquainted with the name of a company whose identity has largely been restricted to doctors and pharmacists. Others are loath to consider the step for the reason that it might not sit so well with the doctors. Also there is the possibility of the public wondering if the same company should make both the potent pharmaceuticals that are used in serious illnesses and the ordinary products which it sees advertised for everyday, ordinary use. The public is apt to be very discriminating in this regard, it is felt by some, and the advantages of such a step would be outweighed by the disadvantages. There are some who feel, nonetheless, that a pharmaceutical manufacturer could advertise an over-the-counter product via radio, TV, magazines, etc., and refer to the company as the manufacturer of some well known "miracle" drug whose use is restricted to prescriptions.

Since the Food, Drug, and Cosmetic Act, as amended by the Durham-Humphrey Act, has divided the products of the drug branches of the industry into two categories—restricted to prescriptions and for over-the-counter sale—this tendency to promote some of the more popular products of pharmaceutical manufacturers through advertising to the public has been seriously considered. However, it has been claimed that there are actually three classifications of drug products—those restricted to prescriptions, those sold over-the-counter, and those advertised direct to the public. But under the labeling conditions brought about by the Food, Drug, and Cosmetic Act which require the listing of active ingredients as well as full directions for use on products not restricted to prescriptions, many manufacturers see no reason why any over-the-counter product cannot be advertised to the public if there is anything to be gained thereby.

The fact that proprietary manufacturers, cosmetic manufacturers, as well as pharmaceutical manufacturers have been living with the stringent requirements of the Food, Drug, and Cosmetic Act since its enactment in 1938, has brought to all of these manu-

(Continued on page 394)

Aluminum Chlorhydroxy Lactate Complex . . .

by Joseph Kalish, Ph.D.

Introducing a new aluminum compound, a complex iron that is compatible with soaps, recommended for the manufacture of antiperspirant alcohol-stick preparations.

THE Reheis Company has introduced a new aluminum compound—the sodium aluminum chlorhydroxy lactate complex, Chloracel—which for the first time permits the formulation and convenient manufacture of antiperspirant alcohol-sodium stearate (cologne-type) sticks. Sticks prepared and tested by the company are said to be effective antiperspirants, the concentrated complex solution causes no primary irritation and the compound is non-destructive to fabrics.

Sodium aluminum chlorhydroxy lactate complex, $Na_3[Al_2(OH)_5Cl(CH_3CHOHCOO)_3]$, is made by a special process for which patents are now pending and applications of the new compound are also covered. It is being made available as a 10 per cent solution and the analysis, given below, corresponds closely to theoretical values:

Al_2O_3	8.0 ± 0.3 per cent
Cl	2.8 ± 0.1 per cent
Na	5.1 ± 0.2 per cent
Lactic acid	21.0 ± 1.0 per cent
Iron	75 p.p.m. maximum
Arsenic (as As_2O_3)	2 p.p.m. maximum
Heavy metals (Pb)	20 p.p.m. maximum

The 10 per cent solution has a pH value of 8.5 ± 0.25 and a specific gravity of 1.23 to 1.25 at 25° C.; the solution is not astringent.

The alkalinity of the solution decreases as it is diluted with water:

%Complex	pH
10	7.8
20	8.2
30	8.3
40	8.5

With respect to skin safety, 24 hour patch applications on 25 individuals resulted in no reaction and provided evidence that the new compound is not a primary irritant. In a fabric test, application of a solution containing 20 per cent of the sodium aluminum chlorhydroxy lactate complex to a standard linen cloth, followed by pressing with a hot iron, resulted in virtually no discoloration or injury. This result was even better than that obtained with a 20 per cent solution of aluminum chlorhydroxide complex, as contrasted with substantial damage and discoloration after the use of aluminum sulfate and aluminum chloride solutions.

The problem of formulating a suitable stick preparation for cosmetic use is basically the problem of making the stick and then adding only compatible ingredients so that the stick is still satisfactory. Thus, the stick must be hard enough so that it will not change its shape or form during shelf storage; requirements in this respect can be somewhat modified by the use of containers that support the stick, but this support cannot be made to counteract a poorly formulated preparation. The stick is preferably translucent, but this seems to be a relatively minor consideration. Application should be easy, without crumbling and without the deposition of too heavy a film. The film should dry quickly and the residue should be virtually invisible and unnoticeable. These are vital requirements.

All-in-all, the cologne-stick type of product closely approximates the ideal. This is a gel consisting of sodium stearate and alcohol which must be protected by its package from rapid evaporation, but which is easily and smoothly applied to the skin surface where it quickly dries to leave an invisible film.

Sodium stearate is the paramount gelling agent and has major influence on the properties of the finished stick. If another salt of the fatty acid is used, or if an ingredient in the stick can react to form another salt, the gel may not form or be broken or lose consistency. The fatty acid component is also limited to a narrow range, usually being the commercial stearic acid containing palmitic acid. Unsaturated fatty acids in substantial amounts, or lower molecular weight fatty acids, will not form satisfactory gels. The sodium stearate concentration in the finished stick can vary from four to eight per cent, the lower value giving a soft, wet gel while the upper limit makes a hard and dry product. Excess water will also reduce the strength of the gel and prevent its formation if too much is present.

Plasticizers prevent the residual film of sodium stearate from drying out to a white deposit and powdering off. Humectants compatible with sodium stearate and with alcohol are used for the purpose, glycerin and propylene glycol being among the more popular. In this connection, it is possible to use various emollients and skin conditioners, always with due consideration for their compatibility with all ingredients of the stick and their effect on residual film.

The manufacture of alcohol gel sticks involves the dissolving of sodium stearate and other ingredients in alcohol at an elevated temperature. This operation carries with it a fire hazard as well as the possibility of excessive alcohol loss; kettles with reflux condensers to condense the evaporating alcohol reduces these problems to a minimum. In some cases it may be also useful to utilize a number of small containers instead of a single large one during the filling operation, which further reduces alcohol loss.

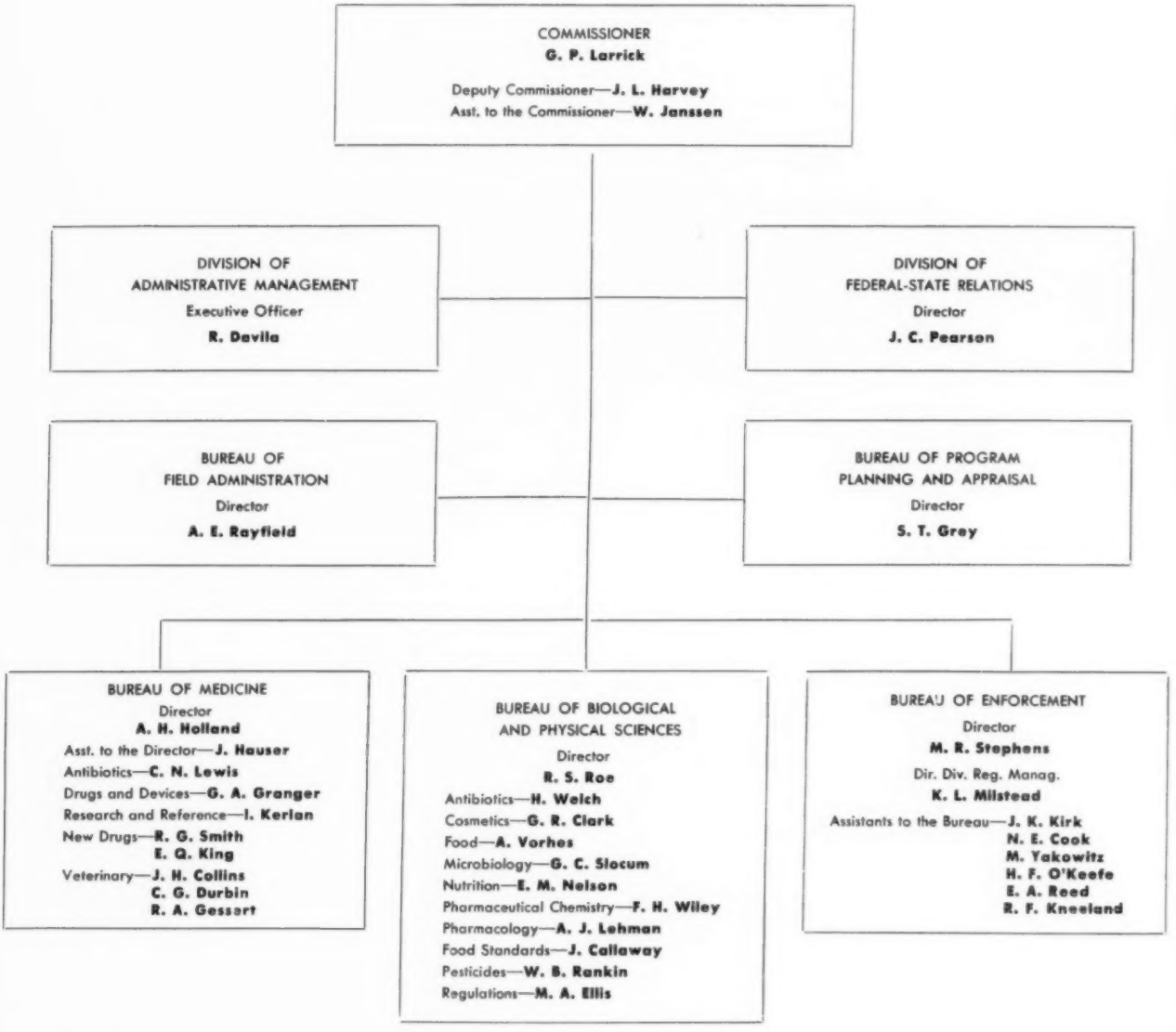
Sodium stearate itself is a factor in the manufacturing process. Either the soap can be bought in finished form and then dissolved in the hot alcohol or it can be made from sodium hydroxide and stearic acid during manufacture. Both procedures have their advocates, the use of alkali and acid permitting somewhat more rigorous control of uniformity.

The new aluminum complex is compatible with the components of the alcohol gel stick. This is outstanding since aluminum compounds ordinarily used for deodorant and antiperspirant action react with the sodium soap to form insoluble aluminum stearate with immediate destruction of the gel. Typical formulas are the following:

Sodium aluminum chlorhydroxy complex, 10 per cent solution..	50.0	50.0	grams
Specially denatured alcohol.....	42.0	42.0	cc.
Propylene glycol.....	3.0	3.0	grams
Sodium stearate.....	6.0	....	grams
Sodium hydroxide.....	...	0.75	grams
Stearic acid.....	...	5.25	grams
Water.....	...	2.0	grams
Perfume.....	qs	qs	

(Continued on page 417)

The Food and Drug Administration



The Commissioner, G. P. Larrick, along with his assistant W. Janssen and the Deputy Commissioner J. L. Harvey, heads the Food and Drug Administration under the general direction and supervision of the Secretary of Health, Education and Welfare and administers the Federal Food, Drug and Cosmetic Act, the Federal Caustic Poison Act, the Import Milk Act, the Filled Milk Act, and the Tea Importation Act.

The **Division of Administrative Management,** R. Davila, executive officer, assists the Commissioner on administrative and organizational matters. This division: formulates financial management policies and prepares budgets; maintains fiscal records; provides mail and records service; procures supplies and equipment; recruits, appoints and effects personnel actions; conducts organization and method studies; plans space allocations; issues publications and fur-

Commissioner George P. Larrick

nishes information relative to the Food and Drug Administration.

The **Division of Federal-State Relations,** directed by J. C. Pearson, develops and coordinates cooperative work among Federal, State and Municipal officials engaged in enforcing laws regulating foods, drugs, cosmetics and related products.

The **Bureau of Medicine,** director A. H. Holland and assistant to the director J. Hauser, develops the medical policy of the Food and Drug Administration with respect to the therapeutic efficacy and safety for man and animals of drugs, devices and cosmetics. The bureau conducts clinical studies, passes on new drug applications and prepares the medical aspects of court cases.

The **Bureau of Enforcement** is directed by M. R. Stephens, with K. L. Milstead as director of the Division of Regulatory Management. Assistants to the bureau director are J. K. Kirk, N. E. Cook, M. Yakowitz, H. F. O'Keefe, E. A. Reed and R. F. Kneeland. The bureau directs the work involved in the review of each proposed legal action in terms of compliance with policy, enforcement objectives, adequacy of evidence, etc. It determines whether the Administration will initiate legal proceedings and is responsible for answering inquiries related to the labelling and composition of products, and proposed or pending legal actions with interested parties. The Bureau directs the collection of factual evidence in preparation for trial of contested seizure, prosecution and injunctions proceedings. It plans, initiates and directs the development of evidence leading to precedent-establishing court contests designed to test and interpret the law.

The **Bureau of Biological and Physical Sciences** is directed by R. S. Roe. It administratively directs the operations of the laboratory divisions: Antibiotics, Cosmetics, Food, Microbiology, Nutrition, Pharmaceutical Chemistry and Pharmacology. It is responsible for the integration of scientific research, developmental activities, certification and control operations with other programs. The bureau makes studies to improve internal management of the headquarters' laboratory operations and provide more effective and economical service to the field and industries services. It directs the coordination of projects, such as the preparation of specialized training material for field laboratories, preparations of standards, tolerances and regulations.

A. E. Rayfield directs the **Bureau of Field Administration** which directs the activities of the field force. The bureau establishes policy for field operations, translates overall plans into operational programs and assignments and monitors emergency activities on area and national recalls, disasters, epidemics, poison outbreaks, etc. It coordinates district recruitment, training and development of field personnel and assists in acquiring and designing field quarters. It develops inspectional and laboratory procedures and establishes and administers field staffing and fiscal allocations. It evaluates field performance and initiates personnel adjustments to achieve proper balance. The *Field Service*, through personnel located in 16 food and drug districts and 36 resident inspection stations carries out investigations to discover and prove violations of the Act. It inspects manufacturing plants for conditions which may lead to violations; collects and analyzes samples; recommends the initiation of legal proceedings; cooperates with local authorities; provides information to members of industry and consumers.

The **Bureau of Program Planning and Appraisal,** directed by S. T. Grey, develops long-range plans for the balanced distribution of manpower and programs for effective operation and uniform enforcement. It compiles and evaluates the results of enforcement activity and other essential information to improve programming. It directs the Civil Defense Program of the Food and Drug Administration.

AMBERGRIS

by Hugo Janistyn

Among the many raw materials used in perfumery, ambergris is surely one of the most peculiar. Known and esteemed for many centuries, it was for a long time a mysterious drug of disputed origins. But today it can be safely assumed that ambergris is a product of metabolism in the intestine of the sperm-whale, even if we cannot yet say whether it is formed pathologically or through the normal digestive process. In any case it is found frequently, though by no means in the intestines of slain whales only, and in quantities that vary greatly. This "body ambergris" differs in odor and appearance from the good varieties utilized in perfumery. The water content is generally high, the consistency rather oily, and the odor fetid. Body ambergris can be used only after long aging. Larger quantities for commercial use are obtained from the ambergris washed ashore by the ocean waves. These kinds, too, differ greatly, varying in color from a dirty white to a blackish brown in many shades. Just as varied are the odoriferous properties. Although the lighter kinds are especially prized, the darker-colored parts can also be used for their odor. Characteristic of all varieties is the presence of cuttlefish snouts, large specimens of which can be separated in certain cases. Some varieties show a stratified structure, with the individual layers varying in color, consistency and odor. The best commercial qualities, which are expensive, are known as "gray amber" (*ambre gris*). This is highly soluble in 95 per cent alcohol; the residue amounts to 10 per cent at most and in good lots is powdery and brown-colored after drying.

There are numerous references to the suitability of ambergris for perfumery, and only rarely is its value questioned. As the kinds of commercially available ambergris vary, opinions concerning it differ too, all the more since adulteration is occasionally attempted. Properly processed gray amber of good quality is particularly valuable in perfumery, and the effect of these expensive varieties is unique. Until just a short while ago it was not possible to duplicate their natural odor.

The complex scent of genuine ambergris is composed of these few clearly discernible notes:

1. The odor of seaweed exposed to sunlight, and thus of seawater itself.
2. The fragrance of wood and damp earth, but without a musty effect.
3. The scent of fine tobacco.
4. A slightly fetid tang which, however, is not conspicuous in the good kinds.
5. A musk-like scent, varying in strength, that blends in rather like an undertone.

The peculiar note of genuine ambergris led to the development of many substitutes, whose suitability for perfumery varies. These "ambergris compositions" and "ambergris bases" occasionally interpret the nuances of odor quite imaginatively, particularly as natural abundance itself supplies a variety of "ambergris scents."

The following natural and artificial products are included under the designation *gamme ambree:*

Labdanum oil and extracts (cistus)
Clary oil and extracts (absolutes, etc,)
Cypress oil (especially its fractions with high boiling points)
Abelmoschus oils (ambrette seed)
Zdravets oil
Tobacco
Angelica root oil
Cardamom oil
Hyssop oil (especially terpeneless)
Celery seed oil
Parsnip oil (some fractions)

BETTMAN ARCHIVE

Nigella oil
Aloe-wood oil
Poplar bud oil
Rosemary oil (e.g., Dalmatian)
Ambrettolid
Iso-Ambrettolids
Cyclopentadecanolid
Benzyl acetaldehyde
Isobutyl cinnamate
Diisopropyl benzaldehyde

The foundations of most of the better known ambergris bases or compositions are labdanum and clary. Valuable though they may be, they can never quite replace genuine ambergris in its effect. Such combinations are always made up of labdanum, clary, benzoin, Tolu and Peru balsams, vanilla extracts, vanillin, olibanum, Tonka, nitro-musk bodies, ionones, methyl ionones, rose oils, ambrette oils, quinoline derivatives, civet, Tonkin musk, ambergris tincture, and special synthetic perfume bodies, depending on taste and price range.

The composition of genuine ambergris is altogether different. Here the actual perfume bodies are present in very small amounts only (about one per cent), while the main components (ambrein, coprosterol, epi-coprosterol, coprostanone, hydrocarbons, etc.) contribute nothing to the odor. Probably ambrein plays a special role, as this triterpenic alcohol may very well be the substance upon which the ambergris perfume bodies are built. The long period in seawater and in the presence of copper (or sometimes of vanadium), along with the influence of air and light, causes ambrein to be formed in ambergris. At any rate, experience shows that old ambergris lots present the best and strongest scent.

Ambergris, traditionally used in tincture form, homogenizes and exalts most perfume oils, lending them warmth and life as few other scent principles can. Moreover, it has an efficacious fixative capacity, and in tenacity it greatly surpasses a Tonkin-musk tincture of the same strength.

Only in the last few years were chemists in Switzerland and France able, by dint of outstanding research, to clear up the highly involved composition of ambergris and thus also the character of the perfume principles it contains. In addition they succeeded in synthesizing most of these principles in various ways, even going further and developing a series of new ambergris perfume principles having the character of true ambergris. Syntheses were also successful in Germany: Available under the name Ambropur (Dragoco Co.) is an ambergris product obtained by synthesis that is first-rate in scent. In contrast to other ambergris compositions, Ambropur contains the natural note of gray ambergris. Its perfume strength is enormous, and is best used in the form of a 1-10 per cent alcohol solution. The amount to be added depends on the type of composition or of the perfume oil.

It is sometimes said that when labdanum is used, further addition of ambergris tincture is superfluous. This is true, however, only in a limited sense.

The clary valued by all perfumers has, as is known, a fine ambergris note. Its determining perfume prin-

(Continued on page 394)

EFFICIENT Small Plant OPERATION*

by F. L. Adams
MANUFACTURING MANAGER, AVON PRODUCTS, INC.

There are probably more small plants than there are large ones and I am sure that the same operating principles which make a large plant efficient will also make a small plant efficient. I believe that there are three very important factors which affect costs in any plant and I am going to talk about them. They are: Supervision; Space, Layout and Flow of Work; Materials Handling.

SUPERVISION. I believe that this is the most important factor in the operation of any plant whether the owner-manager runs the plant where there are only a few employees, or whether the manager, who is responsible for the operation, has hundreds of employees working for him.

The duties and responsibilities of each supervisor should be defined, in writing, and the supervisor should have a copy of it. This could be called a job description. Whatever it is called it is essential that the supervisor know what is expected of him.

I have listed what I feel should be in a job description. 1—Title; 2—Date of Original Issue; 3—Date of this Issue; 4—Basic Function; 5—Basic Objective;

COURTESY BRISTOL-MYERS CO.

6—Major Duties and Responsibilities; 7—Limits of Authority; 8—Relations with others; 9—Measure of Performance.

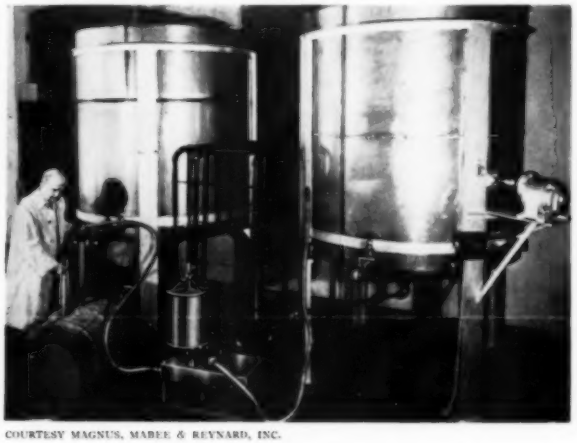
The workers and maybe the supervisor may need some training. I believe that there is one best way to do any job whether it is running a machine or doing hand work and if the worker is properly trained,the work will be done better and cheaper. Pictures and diagrams of assemblies are very helpful in training employees on a new job. If you can get moving pictures of the new operations they help to cut down the time needed for training. I am sure that many of you have tried the experiment of putting six girls on a new job without any instruction, letting them work out a method of doing the job. I am sure you have found out they come up with six different ways of doing the job and not all of them are good. This point to the needs for training.

*Before the Toilet Goods Association, May 16, 1956.

The best supervisor you can get, properly compensated is probably the cheapest in the long run. Some of you people may have, some place in your organization, a supervisor with many years of service —in fact one who has grown up in the job but who cannot be ranked as a top notch supervisor. If you do, you can pursue one of two different courses. Either train that supervisor to do the job you want done or replace him. Either course of action is difficult and you have to decide which is the most feasible.

Maybe you haven't enough supervision and are asking your supervisor to do a job that even you could not do properly. Adequate supervision is a must for any job where costs must be watched.

For uniform output, day in and day out, every job must be paced. This pacing may be done with a machine or if it is hand work, by a good employee. The speed of a machine should be checked frequently because many machines have a habit of slowing down if not carefully watched. The output of a line paced by a good employee may vary from day to day too because he or she does not feel quite right.



COURTESY MAGNUS, MABEE & REYNARD, INC.

A frequent check on output, either hourly or at least at noon and the end of the day, is a must. This applies to both bench work and to line operations. It is important that the employees know what is expected of them and the amount to be produced each day. Maybe a card showing how many girls are required for each job and the standard output should be posted where all on the line can see it. This eliminates any complaint that "in the past that much work wasn't expected of us." It also helps to tell the employees how many pieces were produced the day before.

Where the number of identical pieces produced is small there is a great chance of excessive cost due to: 1—Containers not being up to the standard of quality; 2—Poor adjustment of equipment; 3—Need of repairs to certain pieces of equipment; 4—Poor supervision; a) Line not ready for help; b) Failure to check output periodically.

To an employee, his immediate supervisor is management and for any employee to think well of the company or the product he is producing, he must have confidence in the management. And to management in the small plant, the supervisor may be the Quality Control Department, the Time and Motion Study Department, the Industrial Relations Department as well as the Production Department.

Now the second important factor, *layout, space and flow of work.*

I believe that the layout of the department where the work must be done is very important. The location of the ingredients and the empty containers as well as the finished stock can have a lot to do with your costs. There must be good lighting and good ventilation and certainly comfortable chairs for the workers. There should be adequate space for the work to be done and if possible some room for future expansion. Maybe you can't do anything right now about adequate space but if you have to move the supplies again and again and again before you are ready to ship, it is probably costing you far more than you think. In other words, you better look at your *flow of work.* Can you complete the entire operation without temporary storage? Does it flow in more or less a straight line? Of course to travel in a U shaped path is satisfactory if you have a common entrance and exit. It will pay you to study the flow of work and make such changes as will give you the straight line flow of work with the minimum of handling.

It is probably not worthwhile talking about the advantages of single floor operation over multi-story operation because most small plants operate on one floor and many new large plants are almost one floor operations.

I am not going to spend any time talking about mixing equipment. There are so many different types and different sizes that it would be hard to recommend any particular equipment for you. You have undoubtedly spent time studying this phase of your business and have now what you consider good equip-

(Continued on page 396)

Toxicity of Monoethanolamine

This paper is a report on very extensive toxicity studies which have been carried out in our laboratories, and in other laboratories, determining the comparative toxicological properties of ammonium thioglycolate cold waving lotions and monoethanolamine thioglycolate† cold waving lotions. A cursory examination of the literature which has been published on the subject of the toxicity problems in cold waving might easily lead the reader to the conclusion that the cation associated with thioglycolic acid in a cold wave is a matter of little or no importance. Again and again, earlier workers, who failed to demonstrate differences in toxicity when they compared different thioglycolate salts, concluded that the cation does not contribute to the toxic properties. We have, in the course of the last ten years or so, proved most conclusively that nothing could be further from the fact.

As will appear, we are satisfied that the replacement of *all* the ammonia in a conventional ammonium thioglycolate cold wave with monoethanolamine is a highly judicious step—those of us who have taken it may even be forgiven for rating it "commendable." If you reason from this that other comparable substitutions will be comparably safe, however, you will be in danger of most serious error.

We have found, sometimes to our amazement, that certain cations are unpredictably bad. For example, work not yet reported indicates that a potassium thioglycolate cold waving lotion, studies by the same methods that I am about to describe, yields most disconcerting results. And we have come across other cations, widely used in cosmetics, which when combined with the thioglycolate ion give lotions whose effects on the skin of rabbits are most severe.

Monoethanolamine

No one familiar with the history of permanent waving doubts the benignity of free monoethanolamine in hair waving lotions, of course. During the ten years preceding the tremendous acceptance of cold waving which we have seen, monoethanolamine sulfite waving lotions containing a generous excess of uncombined monoethanolamine were very widely distributed. From our own sales records, we calculate that better than 75 million hot waves of the monoethanolamine type were given.

The literature, published and unpublished, comparing the toxic properties of monoethanolamine with those of ammonia is also reassuring. Table No. 1 is a resume of "range finding" toxicity tests performed on these two chemicals in accordance with the procedures of Smyth and Carpenter of Mellon Institute[1].

TABLE I

RANGE FINDING TOXICITY TESTS COMPARING MONOETHANOLAMINE AND AMMONIA*

NAME OF TEST	AMMONIA	MONOETHANOLAMINE
Saturated Vapor Exposures (Rats)	One min. killed 2 of 4 Five min. killed 4 of 4	4 hours killed 2 of 6 (vapor saturated at 170° C)
Single Dose Oral Toxicity (Rats)	LD_{50} = .35 gm/kg	LD_{50} = 2.44 ± 0.3 gm/kg
Chemical Burn of the Eye (Rabbits)	5% in H_2O = "Severe Injury" 1% in H_2O = "Minor Injury"	15% in H_2O = "Severe Injury" 5% in H_2O = "Minor Injury"

* This is a summary of unpublished data communicated to the authors by

THE UNION CARBIDE AND CARBON CORPORATION

Since the procedures have been reported in the literature, we will not describe them here. I should like to point out, however, the significance of the 170° C. temperature at which the air was "saturated" in the inhalation tests of monoethanolamine: monoethanolamine boils at this temperature. Air was passed through boiling bath of monoethanolamine and thence into the animal inhalator.

Perhaps I should add that Dr. Smyth's procedures are designed to discover possible industrial hazards in the handling of new chemicals. The question which this particular test answers is whether the danger of accidental inhalation of monoethanolamine fumes is substantial and his finding is obviously that the danger is less than the danger of corresponding inhalation of ammonia fumes. Similarly with his "chemical burn of the eye" tests. Here a copious flooding of the eye with the solutions named was carried out to discover the damage that might be done were one accidentally to splash some of the test chemical into his eyes. We are grateful for permission to publish these findings.

Monoethanolamine Thioglycolate Cold Waving Lotion

It was three or four years ago that we first settled on monoethanolamine thioglycolate as a possible improvement over ammonium thioglycolate for cold waving processes. Frankly, our chief aim was to get away from the pungent odor of ammonia, an odor

*From proceedings of the Scientific Section of the Toilet Goods Association, No. 25, May, 1956.

†Properly, the salt of monoethanolamine and thioglycolic acid should be called "monoethanolammonium thioglycolate." But in the permanent waving field the name "monoethanolamine thioglycolate" has been widely adopted, and we have decided to stick with this terminology.

Thioglycolate*

by Ross Whitman and Martin G. Brookins
RAYETTE, INC., ST. PAUL, MINNESOTA

some beauty operators find objectionable. (I should add that, to my great surprise, we have learned that some beauty operators find the odor of ammonia very pleasant, and resent it when you deprive them of it.)

In line with my introductory remarks, the first step toward the serious evaluation of a new thioglycolate salt for use in cold waves must be a study of its toxic properties using animals. We permit experiments in hair waving to be carried out simultaneously only when they are performed by highly skilled chemists on tresses of hair *in the laboratory*, and in no case would we consider allowing a new lotion to be tested in the research beauty shop before the animal investigations had been completed.

Acute Oral Toxicity Studies on Mice

We are very pleased indeed to have been authorized to include in this paper some very extensive animal tests which were carried out by the Hill Top Research Institute, Inc., of Miamiville, Ohio, comparing the toxic properties of ammonium thioglycolate lotions and monoethanolamine thioglycolate lotions.

Table No. 2 shows the results of acute oral toxicity studies which were carried out at Hill Top. The control lotion was 0.54N (5.89 per cent) in ammonium thioglycolate and 0.44N (0.75 per cent) in free ammonia above pH 7. The monoethanolamine thioglycolate test lotion was 0.54N (8.27 per cent) in monoethanolamine thioglycolate and 0.38N (2.32 per cent) in free monoethanolamine. Both lotions additionally contained minor amounts of wetting agents, opacifiers, and perfumes.

TABLE II

ACUTE ORAL TOXICITY STUDIES ON MICE

HILL TOP RESEARCH INSTITUTE, INC., MIAMIVILLE, OHIO

LOTION	DOSE cc/kg	NUMBER OF ANIMALS TESTED	NUMBER OF DEATHS
A Ammonium Thioglycolate Lotion	1.5	10	1
	2.0	10	2
	3.0	10	5
	4.5	10	6
	8.0	10	10
B Monoethanolamine Thioglycolate Lotion	1.5	10	0
	2.0	10	2
	3.0	10	3
	4.5	10	7
	6.0	10	9
	8.0	10	10

Calculations:

LD_{50} Lotion A = 3.0 ± 0.4 cc/kg.
LD_{50} Lotion B = 3.5 ± 0.3 cc/kg.

Procedure:
The samples, diluted with water, were administered orally to white mice by stomach tube. Dilutions were prepared to permit the adminis-

(Continued on page 402)

POWDER AEROSOLS*

by Victor DiGiacomo

GIVAUDAN-DELAWANNA, INC.

During the last decade, the aerosol container has grown from a rather obscure package used primarily for insecticides to a major medium with application in many industries. In the toilet goods industry, the aerosol is now competing with, and is steadily gaining on, the older forms of packaging for the major portion of the toiletries on the market. Up to now, the pressure containers were used mainly for liquid products, leaving the powdered materials for the conventional packages—the shaker type, the powder box, and also the rather new polyethylene container. Today, however, even the powdered products are finding their way into the "push-button" container.

The first material to be packaged in aerosol form which might be placed in the "powder" or "solid" category was the pressure-packed paint spray. This product contained a heavy concentration of pigments together with solvents, drying oils and other carriers, all necessary to give proper coverage during aerosol application. The carriers also aided in the dispersion and suspension of the pigments, allowing them to be pressurized. In addition, a metal or glass ball was placed in the container to break up sedimentation which may have formed during shelf life or while standing.

There were various problems to overcome in the paint spray, some of which were found applicable in the preparation of powder toiletry, pet, botanical and pharmaceutical aerosols. Many solvents and carriers used in the paint spray were of a fast-drying nature, and if the pigments did not clog the orifice, the solvents and carriers could. It was absolutely necessary to use solids within a definite particle size to insure the proper seating of the valve in order to obtain complete valve cut off, and also to prevent clogging of the orifice.

A new powder aerosol recently introduced and now being successfully marketed is the fire bomb which contains sodium bicarbonate as the active ingredient. A basic method of dispersion is used in this product since it is only a one-shot container. The valve seat is punctured allowing the free flow of contents without shut off. There is no intricate mechanism to cause clogging and valve seating problems; the previously-mentioned metal or glass ball again being employed to break up sedimentation.

The aerosol container can offer certain advantages for powder application that the conventional packages do not. Dispensing powder under pressure gives the mix uniformity and prevents oxidation by not permitting contact with oxygen of those chemicals prone to oxidation. This also prevents shelf life decomposition of those materials. Products which are normally hydroscopic under normal packaging conditions resulting in decomposition, lose this characteristic when aerosol packaged. Finally, by using this packaging medium, so-called sterile cosmetics can be obtained.

Most powdered products as normally formulated, are completely incompatible with the aerosol propellants now on the market. It is, therefore, necessary that the product be reformulated before it is packaged in a pressure container. It is necessary, in order to achieve success, to have a uniform material with a definite particle size and to eliminate from the formula certain gums and resinous ingredients which would not be soluble in the aerosol propellants and suspending solvents. The use of these ingredients would cause valve clogging and improper valve seating, resulting in container leakage and non-operative containers. Pressurized containers can be formulated utilizing 10 to 30 per cent of solids depending on the type of product and the formulation. The propellant

mixture may vary depending on the formulation and the end use. We find that 65 per cent Freon® 11 and 35 per cent Freon® 12, or the corresponding Genetrons,® are suitable for most formulations containing approximately 20 per cent powder.

Valve Design

The design of the valve and the type of seating are important when powders are to be dispensed. Component parts of the valve must not be affected by the solvent used as the suspending medium. We have found that certain of the valves now available can be used for powder dispensing. We also know that those valve producers who do not have a product available which is suitable for this purpose are now conducting research in order to obtain such a valve. It is our opinion, however, that if a system or method of powder dispensing is recommended, it would facilitate the work of the valve manufacturer in adapting their valves to this method of powder dispensing.

Various methods and principles have been utilized in conducting experiments for the development of pressurized powdered products. Some of these methods made use of wetting agents to obtain dispersion while others worked on entirely different principles. We, however, suggest a method which we have found to be satisfactory for this type of application. Our particular system entails the use of a suspending medium which prevents agglomerative sedimentation through its ability to absorb the propellant, in addition to being able to suspend the powder ingredient. Based on this principle, we found, during our experimentation, that the suspending material utilized for powder products should have, if at all possible, the following characteristics:

1. It must be soluble in the various propellant mixes which may be used.
2. It must be either odorless or have a very low odor level.
3. It must be compatible with and soluble in essential oils, aromatic chemicals, isolates and other fragrant materials.
4. It must be greaseless in character.
5. It must be non-irritating.
6. Depending on end use of the finished product, the suspending agent should be usable in low concentrations.
7. It must be capable of suspending the powder formulation.
8. The formulation must be readily dispersed on shaking in the event of sedimentation without the use of a mechanical device.
9. It must not attack the valve or other component parts of the aerosol container.
10. It must preferably be soluble in hydrocarbons.

Our experiments have shown that a purified grade of isopropyl myristate has all the required characteristics and is the ideal suspending agent for powdered products. Due to its unique solublizing properties and co-solvency, it performs an additional important function by preventing the crystallization of certain bacteriological agents, perfume constituents and other ingredients which may crystallize on long standing resulting in valve difficulties. The use of a larger concentration of isopropyl myristate in products such as liquid make-up, plant sprays, etc. adds to the functional properties of the finished product. This higher concentration creates a material with a higher residual nature allowing the solid ingredients to adhere in a given area of application.

The propellant mix must also be selected carefully, considering not only the pressure required to make the container operative, but also the solvent effect the propellant might have on the suspending medium. Propellant mixes can be obtained allowing for their use in both metal and glass containers, and both the "cold filled" or "pressurized" methods of loading can be used for the manufacture of this type of package.

Enteric Coating on Granules

by Jerome J. Schorsch and C. Lee Huyck

DEPARTMENT OF INDUSTRIAL PHARMACY, ST. LOUIS COLLEGE OF PHARMACY AND ALLIED SCIENCES, ST. LOUIS, MO.

The purpose of this study is to find a practical method of making granules and to coat them for prolonged action. In connection with the study of the manufacture of granules which disintegrate slowly when taken internally, the whole field of enteric coatings must be reviewed. A review of the leading materials used for the enteric coating of tablets and the results which were obtained are given here.

Shellac.—On the basis of in vitro and in vivo studies' Wruble[1] found that best results were obtained using a 25 per cent shellac solution in equal parts of alcohol and solution of stronger ammonia U.S.P. Husa and Magid[2] reported satisfactory in vivo studies with a coating consisting of a mixture of salol 22.5 Gm., stearic acid 2.5 Gm., and a 10 per cent alcoholic solution of orange shellac 10.0 cc. On the basis of X-ray studies, Mills[3] found a coating of 10 per cent cetyl alcohol and 10 per cent mastic in acetone to be 97.87 per cent efficient; while 10 per cent cetyl alcohol and 10 per cent shellac in acetone was found to be 70.73 per cent efficient. Goorley and Lee[4] found a mixture of 20 parts of castor oil and 100 parts by weight of shellac dissolved in alcohol to give satisfactory results based on X-ray and fluoroscopic determinations. Brenner[5] found a solution consisting of 25 parts of shellac, five parts castor oil, and 95 parts of 96 per cent alcohol to be satisfactory by an in vitro and an in vivo method.

Cellulose acetate phthalate.—Abbott and Allport[6] found cellulose acetate phthalate coatings to be most satisfactory when tested by an in vitro method. Hodge, Forsythe and Ramsey[7] reported that tablets and capsules coated with cellulose acetate phthalate possessed satisfactory enteric characteristics when tested in vivo. Huyck[8] investigated a five per cent cellulose acetate phthalate solution in equal parts of ethyl acetate and 3A denatured alcohol and concluded that this material has possibilities as an enteric coating when tested by an in vitro method. On the basis of in vitro and in vivo studies, Bauer and Masucci[9] found the cellulose acetate phthalate coating to be satisfactory since the tablets disintegrated for the most part in the jejunum. Schaldemose[10] found that a varnish containing cellulose acetate phthalate 27, triacetin 6, methyl alcohol 30, and chloroform 237 Gm. gave satisfactory results when tested by the in vitro method.

Resins.—Eldred[11] patented a formula for the enteric coating of tablets consisting of abietic acid 10 lbs., methyl abietate 3 oz., oleic acid 1 pint, and benzoic acid 12 oz. A patent was granted to Volwiler and Moore[12] for a process of coating tablets enterically using specially modified alkyl resins. In one example, a mixture of stearic acid 17.57 parts, phthalic anhydride 53.65 parts, and glycerine 28.78 parts were fused together at 200° C. in a current of carbon dioxide until the desired acid number was obtained. Malm and Hiatt[13] patented a mixture of 50-65 parts of a sodium salt of polyvinyl phthalate having a phthalyl content of 55-65 per cent and an acetyl content of approximately two per cent, to be used as an enteric coating. Nicolan and Carrera[14] patented this coating formula: To 16 Gm. of acetylphthaloylcellulose in 1300 ml. of acetone was added a mixture of 12.5 Gm. of tolu balsam and 12.5 ml. of acetone, and after 24 hours the clear solution obtained by centrifugation of 25 Gm. of

Photograph 1.—Disintegration Test Apparatus—Modified test tube holder attached to the electric motor.

shellac in 90 ml. of absolute alcohol was added.

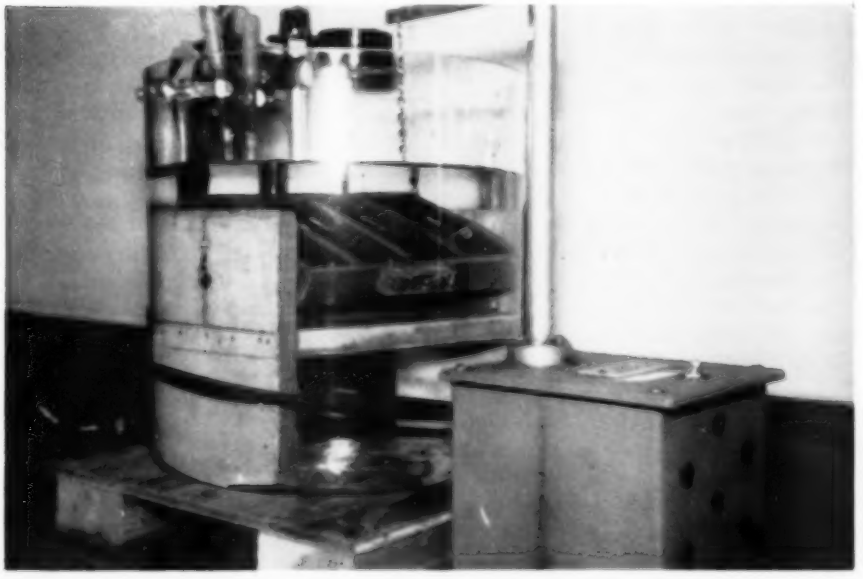
Miscellaneous substances.—A tablet coating was patented by Miller[15] which was prepared by melting together stearic acid 55.50 parts, carnauba wax 24.25 parts, and petrolatum 1.75 parts; then incorporating powdered agar 13.90 parts and powdered elm bark 4.60 parts. Worton, et al.[16] evaluated the patented coating by Miller[15] using an in vivo and an in vitro method and found it most satisfactory. Through radiographic studies, Bukey and Klemme[17] found that mastic-magnesium stearate coatings were 62.5 per cent efficient, while mastic-talc coatings were 48.5 per cent efficient. A coating was developed by Maney and Kuever[18] consisting of 68 per cent myristic acid, 25 per cent hydrogenated castor oil (opal wax), two per cent castor oil, one per cent cholesterol and four per cent sodium taurocholate, which was found satisfactory by both the in vitro and in vivo tests. Thompson and Lee[19] obtained favorable results in vitro with a mixture of stearic acid 8.0, mutton tallow 6.0, balsam tolu 2.0, and iron bile salts 1.0 Gm. in 60 cc. of 1:1 alcohol-ether mixture as well as a similar mixture in which 1.0 Gm. sodium taurocholate (65 per cent) replaced the iron bile salts. Stoklosa and Ohmart[20] found that a coating consisting of 15 parts of n-butyl stearate, 30 parts of carnauba wax, and 25 parts of stearic acid was satisfactory when evaluated by fluoroscopic visualization method.

Successful coatings for granules.—A patent assigned to Smith, Kline & French[21] relates to a sympathomimetic preparation providing for release of the drug over a long period of time. The pellets were prepared using a crystalline or powder form of the selected drug using the procedure for making sugar pellets[22]. They were also prepared by placing small spherical sugar pellets 12 to 10 mesh in size in a rotating coating pan and coating them with a powdered drug. Before the addition of the powder, the sugar pellets were wetted with syrup U.S.P., or a gelatin coating solution. After the drug pellets were formed, they were coated with a 5-25 per cent wax-fat coating solution such as glyceryl monostearate and beeswax dissolved in carbon tetrachloride. Gagnon, DeKay and Lee[23] coated granules of aspirin and starch for prolonged action. The ingredients were mixed and slugged. The slugs were broken up into granules by passing them through a Stokes' oscillating granulator. A sufficient quantity of simple syrup was added to obtain a mass of desired consistency. The mass was passed through a Colton upright granulator which forced the mass out into strands. The strands were cut into short lengths after which they were placed in a large coating pan and made into rounded granules. The granules were then dried and coated with six different formulations of enteric coating solutions. Coating granules with aqueous solutions was found unsatisfactory. Best results were observed when the aspirin and starch granules were coated with an acetone solution of cellulose acetate phthalate. The formula of this coating solution was cellulose acetate phthalate 10 Gm., diethyl phthalate 2.5 cc., and acetone 109 cc. These granules remained intact for five and one-half hours in artificial gastric juice and disintegrated during one hour in artificial intestinal juice. After some of these coated granules were compressed into tablets, considerable delay in disintegration was observed as compared to the compressed uncoated granules; however, the degree of disintegration over periods of time was inconclusive and further study was recommended.

Experimental

Preparation of the Granules.—Several methods were explored to prepare granules. The following procedure was found to give good results. Sodium bicarbonate

Photograph 2.—Complete Disintegration Test Assembly.



COURTESY HOFFMANN-LA ROCHE INC.

was chosen as the soluble medicinal agent. Twenty per cent aqueous acacia mucilage was prepared by the following process: The acacia was placed in a suitable container and an equal weight of warm water was added to it. It was rapidly stirred for several minutes, set aside and agitated at frequent intervals until all the acacia was dissolved. Then the acacia mucilage was heated on a steam bath and made up to the final weight. It was stirred well and then strained through fine muslin.

One and one-half pounds of sodium bicarbonate were granulated in a Hobart mixer using number one slow speed paddle agitation. The twenty per cent acacia mucilage was added gradually to it until the mass possessed the desirable adhering properties. The amount of acacia mucilage that was used was four and one-third fluid ounces for one and one-half pounds of sodium bicarbonate. The moistened mass was passed through the Colton wet granulator, provided with a number eight screen. The strands were cut into small lengths with a spatula after which they were placed in a coating pan and rolled for about twenty minutes. The rounded granules were spread on perforated trays covered with paper and placed in the drying oven. They were dried overnight at 120° F. After drying, the round granules were hard and contained a minimum of fine powder.

Aluminum hydroxide was selected as the insoluble medicament to be formed into granules and coated with the enteric coatings. Ten per cent starch paste was used as the granulating agent. The corn starch was placed in a suitable container and an equal weight of distilled water was added to it in order to make a uniform paste. The mixture was heated until a translucent mass was formed. The heat was removed and the weight of the mass was adjusted with distilled water to contain 10 per cent starch.

Two pounds of aluminum hydroxide were granulated with 0.63 lbs. of the prepared starch paste to obtain the desirable adhering properties. The granules were prepared with the Colton wet granulator as previously described. They were sufficiently hard and of the desired size and shape.

Coating of the Granules.—The following enteric coating solutions were selected since their value was established in several studies [1-4-5-6-7-8-9-23].

1	
Cellulose acetate phthalate	10.0 Gm.
Diethyl phthalate	2.5 cc.
Acetone	109.0 cc.
2	
Arsenic-free shellac	20.0 Gm.
Alcohol (U.S.P.) q.s. ad	100.0 cc.
3	
Arsenic-free shellac	15.0 Gm.
Castor oil	3.0 Gm.
Alcohol (U.S.P.) q.s. ad	100.0 cc.

[1]Cellulose acetate phthalate from Eastman Kodak Co., Rochester, N. Y.
[2]Arsenic-free shellac from Bradshaw-Praeger & Co., 3248 West 47th Place, Chicago 32, Ill.
[3]Diethyl phthalate from Monsanto Chemical Co., St. Louis, Mo.

Prior to coating, the granules were passed through a number eight screen and placed in a stainless steel coating pan seven inches in diameter which was rotated at 65 revolutions per minute. An electric hair drier was used as a source of hot and cold air for evaporating the solvents used in the coating formulations. A sufficient quantity of number eight granules was placed in the coating pan to get a good tumbling effect. The coating solutions were applied by pouring them on the granules while they were rolling in the pan. The greatest difficulty encountered in the coating process was the tendency of the granules to stick to one another and to the pan. This can be overcome by the addition of a dusting powder, but none was used since it might interfere with the disintegration and determination of the amount of coating added.

Coating of the Subcoated Granules.—A study was made to determine if the disintegration time of the sodium bicarbonate granules could be increased by the addition of a subcoat. The granules were prepared as previously described. They were placed in a stainless steel coating pan and a seal coat of arsenic-free shellac was applied. Enough coating was added to cover the entire surfaces. The increase in weight was noted to determine the amount of coating applied. The subcoating powder which was precipitated calcium carbonate was applied after the granules were moistened with plain syrup. This plain syrup had a concentration of fifteen pounds of granulated sugar

(Continued on page 412)

Capless Squeeze Tube for One-Time Use

Packaging Item of High Customer Convenience Proves Effective for Pharmaceuticals, Perfumes

A tiny tube that eliminates the use of a cap and offers product protection until squeezed and a seal at the top breaks open is the latest innovation in containers for liquids, creams and pastes.

Made of seamless Saran tubing, these new containers offer the general protective characteristics of this most impermeable plastic and can be used to hold drugs, perfumes, paints, foods and many chemicals that, because of leakage or diffusion, have been problem items when packaged in other flexible containers.

Called Unette dispensers, these one-unit containers for liquids or semi-solids are now being made to hold quantities from 0.2 c.c. to 7.0 c.c., but a much larger range in size is possible.

Another quality, especially important in the packaging of pharmaceuticals, is the high degree of accuracy with which the tubes can be filled. Special machines which make and fill the containers automatically control the quantity within the tolerances of 0.1 c.c.

In one continuous machine operation, the tubing is formed, filled, then made into individual containers by a solid heat seal on the bottom and a dispensing seal on the neck end.

The dispensing seal is made from a special compound which is strong enough to withstand ordinary pressures such as would occur in handling, packaging or mailing, but which breaks open with ease when the tube is firmly squeezed between the thumb and index finger.

Secret of the dispensing mechanism lies in shaping the neck of the tube slightly narrower than the rest of the container so that when the tube is squeezed its contents are forced through the neck at a higher degree of pressure, causing the seal to pop at the mouth.

The Saran tubing from which these tubes are manufactured is seven to twenty times less permeable than any other known plastic and offers barrier characteristics comparable to glass. Until the seal of the containers is broken open, it is as airtight as a vacuum packed glass jar or tin can and any product packaged in it can be kept as long as desired. Only six times as thick as the Saran wrap, this tubing provides the lightest container possible in keeping with complete product protection.

In instances where complete product visibility is desired, the containers are made of clear transparent Saran tubing. If a more colorful tube is wanted, they are available in 175 different shades of translucent, transparent or opaque Saran.

The Unette Corporation who manufacture and fill the dispensers on a contract basis, spent four years in research and development before the tubes were placed on the market. The complicated machine, which makes the dispensers from start to finish, consists of 4,000 parts.

Although the dispensers have only been available commercially for a short time, they are already being used by the Ciba Pharmaceutical Products Inc. for Nupercainal ointment, Lentheric Division of Olin Mathieson Chemical Co. for Adam's Rib perfume, Martin Senour Paint Co. for packaging silicone oils, E. R. Squibb & Sons Division for alcohol. Union Carbide Co. and Sears Roebuck Inc. are distributing Unette dispensers filled with perfume as courtesy gifts to customers, and the Richard Hudnut Division of

Why plastic packages are picked to sell drug sundries

Package-dispenser capitalizes on eye-and-use appeal to build new business

Take milky-white Lustrex styrene—and mold a box. Take crystal clear Lustrex and mold its cover. Fill with super soft, absorbent paper towels. Result: the dramatic sales-compelling package that Graham Manufacturing Company has hired to sell *and resell* BARB-EE Disposable Towels in drug and cosmetic departments.

This plastic box is the perfect permanent dispenser—an attractive addition to any dresser top or bathroom shelf. Molded in sharp, clean detail of Monsanto Lustrex, its top is a hinged cover with plastic "locking" clasp. Before the box is empty—the consumer is reminded to buy a refill.

Lustrex styrene is a plastic with many sales-promoting qualities. It has high break resistance, outstanding clarity and brilliance. It holds its shape . . . it's lightweight, odorless, tasteless. And packages of unusual beauty and design molded of Lustrex are surprisingly low in cost.

M & L Plastic Company of Easthampton, Mass., who molds the BARB-EE box, is one of the many plastics packaging specialists Monsanto can refer you to, when next you map sales strategy for your product. Write Monsanto Chemical Company, Plastics Division, Room 1237, Springfield 2, Mass.

It pays to package in

LUSTREX*

styrene plastic

MONSANTO

Monsanto also supplies polyethylene and cellulose acetate for packaging.

*LUSTREX: REG. U. S. PAT. OFF.

Warner Lambert Pharmaceutical Co. is using them in connection with a new product soon to be placed on the market.

Before using the containers for Nupercainal, its topical anesthetic ointment that relieves pains, itching, simple burns and minor cuts, the Ciba company made exhaustive tests on the new containers under the direction of L. H. Zahn, manager of the Methods and Package Development Division.

Ciba was interested in investigating the potentials of the dispensers, not only for Nupercainal, but as a possible solution to future packaging problems where an accurate pre-measured single unit and quick application would be essential or desirable.

Prior to putting the containers to actual use, Ciba wanted to determine (1) that there would be no appreciable moisture loss which might cause the product to dry out, (2) that the package seals would hold the product with no oil seepage or leakage, (3) that the seal would be strong enough to withstand ordinary pressures, yet open easily to dispense its contents.

In order to assure these qualities Ciba made numerous laboratory studies in cooperation with the Unette Corporation. Samples of Saran tubing immersed in Nupercainal compared with control samples immersed in lanolin in accelerated tests indicated that Saran was suitable for containing Nupercainal.

Test packages containing Nupercainal were placed in a desiccator over sulphuric acid at room temperature and weighed before and after, to make sure that the seals could be made satisfactorily for suitable storage periods.

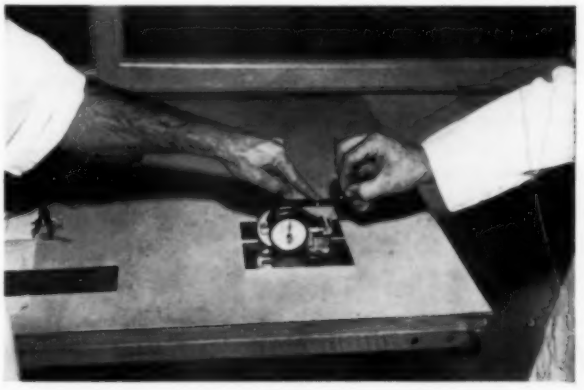
The only real problem that arose was in finding a sealing compound that would break open at the correct pressure. Some of the compounds tested opened too easily; others required too much pressure. A compound was finally found that would burst under about 30 pounds of pressure—strong enough not to leak or break open with ordinary handling, yet flexible enough to open easily when squeezed firmly between finger and thumb.

At present, Nupercainal in Unette containers is being distributed by the Ciba Pharmaceutical Co. as professional samples to doctors. Each container holds exactly 0.6 gm. of Nupercainal and is made in opaque cream colored Saran, the same shade as the product and sales package. Twenty-four of them are put in a slide-and-shell paperboard mailer, arranged six in a row, matchbook style. Product identification and picture is on the outside of the mailer and a printed insert pictorially describes how to dispense the product from the single-dose sample containers.

The first company to use the dispenser for perfume was the Lentheric Division of Olin Mathieson Chemical Co., which was looking for a sampling device for its new perfume, "Adam's Rib." Lentheric's main interest was in a low cost container that would lock in the delicate perfume fragrance and impart no odor of its own that would interfere with the perfume's scent.

Laboratory tests were made at Lentheric to determine the effectiveness of Saran in holding the perfume fragrance and also to determine satisfactory breaking-

(Continued on page 413)



business is a bed of roses...

Planting their famous rosebud on a powder box of rigid plastic has kept business blooming for *Milkmaid Inc.*, New York City, a division of Harriet Hubbard Ayer. Unlike the common cardboard variety, the milk-white rigid plastic box, decorated with rosebuds, stops traffic at the counter, stands up in the steamiest bathroom and blooms in the boudoir permanently.

Try stamping your company's personality on a re-useable polystyrene package. Or select a crystal-clear container that lets your product show through. It's the packaging technique that has been selling practically everything.

There's a Tri-State rigid plastic box to fit your product, build your sales, cut down on your packaging operations. Package in plastic, rigid plastic, for added protection, greater point-of-sales appeal, bonus utility boxes for your customers.

TRI-STATE BOX NO. 72
Diameter 3⅞" x 2-7/16" deep. One of a huge variety of stock sizes and shapes, or we will mold large quantities to your specifications.

TRI-STATE PLASTIC MOLDING CO INC.
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DETROIT: 18401 E. Warren Ave., TUxedo 5-5500 • SAN FRANCISCO: 441 Folsom St., EXbrook 2-7664 • LOS ANGELES: 1831 N. Main St., CApitol 2-5511

Determining Consumer Acceptance

by Dilman M. K. Smith, VICE PRESIDENT, OPINION RESEARCH CORPORATION, PRINCETON, NEW JERSEY

In some product fields, a great deal of work is already under way in the direction of trying to gain better understanding of what goes on in the consumer's mind, what things he regards as beautiful and useful, and what combination of appearance and utility goes to make up "good value" in the mind of the consumer. Manufacturers that produce consumer products are forced by the necessity of staying competitive to develop new merchandise that is styled to the public's fancy, has features that attract the users, and is priced right.

When products are designed in keeping with what the public wants, they move, even against stout competition.

When merchandise is "sticky," volume goes down, dealers are unhappy, and profits fall. Bringing new or re-designed products to market is, as every seasoned management knows, a very hazardous procedure:

> The new product may be styled too far ahead or too far behind the mode that stimulates consumer enthusiasm, or just ineptly styled for the price level at which it was hoped the new style would sell.
>
> Operating features incorporated in the new product may seem highly desirable from the designer's standpoint, but without appeal to the consumer.
>
> The new product may never see the light of the dealers' display shelves or sales floor—the dealer or his buyers may reject the product because of their own ideas on design or price.

When new products are scheduled for introduction, and before final decisions are made by management, there is—in every company—a good deal of soul searching:

> How should the new model or product look?
>
> What operating features should be incorporated?
>
> How should the new model be priced?

American manufacturers have traditionally had many sources of information about consumer preferences: examination of their own sales records, general knowledge of what the competitor is doing, contacts with dealers and distributors through company representatives, and an increasingly better quality of market research. These have yielded *general* information about consumer preferences.

There are three principal factors that limit the usefulness of these traditional sources of information as a guide to *design* problems:

1. At the point of sale many factors other than design have a bearing on actual consumer product selection: price, availability, the maneuvers of competition and the quality and quantity of dealer activity—to name a few.
2. Usually a company's reports on its own and competitive product sales movements give only vague clues as to what part product design itself had to do with the sales success or failure of an individual model.
3. *Further, such reports are "after the fact."* The real need for decision-making information on the probable acceptance of new product developments or designs is *in advance* of tooling-up and production.

EWING GALLOWAY PHOTO

In seeking answers to new product questions, every executive has his own ideas, and a great deal of difference of opinion within executive ranks of a company is the rule. For example:

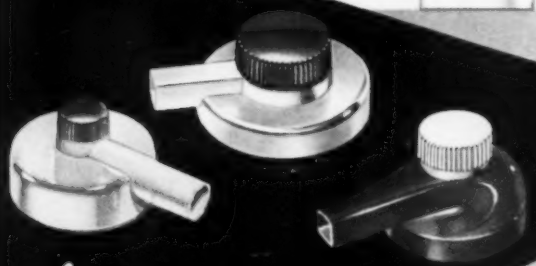
> *The sales manager* in a company injects some factors into the discussion that must be given consideration: problems that have to do with competitive pricing; new developments produced by the competition; new use-habits on the part

For precision and versatility—choose

OWENS-ILLINOIS for PLASTICS

For example—

New 1½-oz. push-up containers . . . available in clear plastic or a wide variety of opaque and transparent colors, with white opaque, snap-on caps.



For example—

Spouts and caps for aerosol shaving lather containers.

For example—

A handy tumbler.

For example—

New 4½-oz. Plastainer jars with stacking feature . . . available in a wide variety of opaque and transparent colors, with screw caps.

Owens-Illinois packaging know-how and high-quality standards offer you the finest in plastic molding facilities . . . Injection molding . . . Compression molding . . . A complete range in plastics for packaging, for specialties.

Branch Offices:

Albany.....New York	Columbus.....Ohio	Memphis.....Tennessee	Portland.....Oregon
Atlanta.....Georgia	Dallas.....Texas	Milwaukee.....Wisconsin	Richmond.....Virginia
Baltimore.....Maryland	Denver.....Colorado	Nashville.....Tennessee	Rochester.....New York
Birmingham.....Alabama	Detroit.....Michigan	New Orleans.....Louisiana	St. Louis.....Missouri
Boston.....Massachusetts	Fresno.....California	New York.....New York	St. Paul.....Minnesota
Buffalo.....New York	Houston.....Texas	Oakland.....California	Salt Lake City.....Utah
Charleston.....West Virginia	Indianapolis.....Indiana	Oklahoma City.....Oklahoma	San Francisco.....California
Charlotte.....North Carolina	Jacksonville.....Florida	Omaha.....Nebraska	Seattle.....Washington
Chicago.....Illinois	Kansas City.....Missouri	Peoria.....Illinois	Toledo.....Ohio
Cincinnati.....Ohio	Los Angeles.....California	Philadelphia.....Pennsylvania	Yakima.....Washington
Cleveland.....Ohio	Louisville.....Kentucky	Pittsburgh.....Pennsylvania	

Pacific Coast headquarters, 350 Sansome St., San Francisco; Plants at San Jose, Calif.; St. Charles, Ill., and Glassboro, N. J.

OWENS-ILLINOIS PLASTICS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

of the consumer as revealed through market research; what dealers say they want in the way of product assortments.

The design department has certain considerations that enter into their thinking as to what the new product should be like—their own creative ideas must be given consideration; new design possibilities that arise through the availability of new materials or processes.

The production department has certain viewpoints which have to be dealt with—manufacturing limitations, cost considerations and packaging necessities.

All of these viewpoints have to be evaluated and decisions made before the new or improved product sees the light of day. In the councils where new product design ideas are finally decided, the consumer who will eventually buy and use the product often is given little or no hearing.

In spite of the sound judgment based on solid experience of responsible executives and designers, a fair percentage of new consumer products reaching the market each year are thoroughly rejected, or achieve only partial sales success. How does a company go about it to insure its risk in this hazardous process?

Modern research has found a good answer to taking the risk out of new model and product development, and it is a very simple one:

> Invite the customer into your style and design conferences. Not literally, of course, but through competent studies of customer preferences and market research.

Fifteen years of research experience shows that under proper questioning procedures, people will tell you about their style preferences and the value they place on any given feature or combination of features.

Ideally, product pretesting should determine probable consumer acceptance while new design ideas are still on the drawing board, and should provide design and engineering departments with useful and reliable information that will help them select the appearance factors that consumers regard highly, and the operating features that consumers deem to have great utility. What the designer or engineer thinks has beauty or high utility may not agree with what the customers think; remember the Chrysler "Airflow," the "Pregnant" Buick, Studebaker's "Free-Wheeling," and "Stroboscopic Control" in radio-phonographs!

The acid test for reliability of these new research techniques is posed in this frequently heard question: "How can you be sure that what a consumer says he likes today is what he will buy when he goes into the market place next month or next year?"

There are three basic psychological factors that underlie the soundness of pretesting of new products at the design idea conception stage:

1. Style preferences are very real and very potent as a buying determinant. The way women fixed their hair changed radically over a ten-year period beginning in the twenties. As a result, women decided they no longer needed or wanted hairnets. All the king's publicity horses and the king's salesmen could not induce women to buy them.
2. Style preferences are always changing but they change relatively slowly. Today's thing of beauty runs its course in popular appeal and presently it is "old hat." But style preferences do not gyrate wildly—black today and white tomorrow, then black the day after. On the contrary, change evolves over a period of time, usually describing some underlying meaning or theme.

   This orderly character of change in style preference makes objective analysis and forecast possible. In any given point in time, the mode, or most wanted style or design feature, can be identified for the buying public as a whole, and for special groups in the market such as young people, newly married, small-town, colored, urban, rural, etc.
3. The consumer cannot describe what he wants in a product, because he is not a product designer. If you want an opinion from a consumer about your product you have to give him a *choice* of several design variations.

   As he starts to examine the choices, his selection becomes a process of rejection. It's easier for him to decide what *he doesn't like* in terms of appearance or in terms of features, than it is for him to reason as *to which he likes.*

How is this process of pretesting carried out? Giving consumers a good idea of appearance and an appreciation of what new operating features will do for them

(*Continued on page 414*)

Packaging and Selling

Reversing a Sinking Product

The most difficult job in business is how to reverse a downward sales trend. According to The Nielsen Researcher, 43 out of every 100 brand managers are facing this trend.

We would put that percentage substantially higher in this industry because of three factors that have been working for quite a while now to shorten the life of cosmetic and drug products.

The first and least important of these factors is that many products are hastily put upon the market today solely because someone thinks they glimpse a winning gimmick or gadget in advertising or merchandising. The second factor is the overwhelming ambition of everyone to broaden their line and to invade every possible competitive field whether their product justifies its new expectations or not.

Undoubtedly the most important reason for the downward trend of many products in this trade is the factor of continually recurring obsolence due to research and invention. It is the unusual product in this trade, particularly in cosmetics, that can look forward to a lifespan of more than three years because of the above reasons.

When a downward trend appears on the sales chart of any particular brand, there are, according to Nielsen, three strikes against you before you start:

Strike 1. The Consumer has sampled your product and decided against it. It is a tough job to get her to change her mind again.

Strike 2. The Retailer has given the product distribution, has given it display, and its opportunity to prove its merit. If after this initial opportunity the sales begin to decline, it is very difficult to recreate retail interest or enthusiasm. According to Nielsen, it is extremely difficult under these conditions of declining sales to improve the quality of distribution through such devices as the addition in package size, increase in case size, packaging multiple units, etc.

Strike 3. Management hesitates to take bold steps to rejuvenate the brand or to invest any more than its historical per cent of sales for advertising and promotion.

It takes a lot of management guts, and faith to sink money into a product with declining sales.

Here are the actual techniques and the basic steps used in the rejuvenation of such brands, according to Nielsen.

Step One: Recognition of the Problem—someone has to recognize the implications of the share-of-market declining trend and persuade his management that something should be done about it. Then either newly-awakened management, or in some cases new management, agree to tackle the problem.

Step Two: Up-Dating the Product—through various types of research (marketing plus product research) management was able to uncover what features consumers really wanted in the product. In most cases this involved a change in product or packaging, which often meant matching the product advantages of successful competitors. In some cases an entirely new product type was offered. In the most successful cases these changes also resulted in the addition of at least one more product advantage than claimed by the leading competitors.

Step Three: Development of a Marketing Plan—by this time management knew what was needed and had several alternative ways in mind to market the product. Any further mishaps for the brand could easily have resulted in an acceleration of the downward share trend, a further decline in dealer support and loss of backing by management. At this critical point accurately-measured consumer test marketing programs held the key to the future of many brands.

Step Four: Execution of the Plan—in virtually all cases the plan involved more than one move: a new, improved product or package, trade and consumer offers, new advertising themes or media, new sales techniques or methods, new pricing structures, new distribution channels, and so forth.

Step Five: Seizure of the Initiative—at some point along this line of events there was a moment when each brand had won the battle for trade and consumer awareness. The brand was no longer fighting a defensive battle—it had won the initiative. In such cases, weaknesses among competitors often developed. Application of the rule "aim your efforts where the competitors are not" was put into effect to good advantage by several of the brands through contra-seasonal advertising, follow-up promotions after competitors had spent their money and special efforts aimed at manageable minorities.

Reversing a downward trend is a job all right, and we wish luck to anyone who finds it necessary to undergo these tribulations. Very often, however, a rule applies in this case, and particularly in cosmetics, that nothing could be deader than a product that has lost retail or consumer favor.

Any one who has any good ideas in advertising, selling, packaging, or in any similar way with application to sales, would do much better to save this idea for a new product, starting fresh all over again, than

to waste it flogging a dead horse with a product that has lost its popularity.

Of course, there are exceptions, and in these cases the above analysis will help.

Marketing Vitamins

The vitamin business is big business and should be a lot bigger according to J. D. Hayden of the R. P. Scherer Corp., Detroit of which Gelatin Products is a division.

In a recent Wall Street Journal Mr. Hayden states, "We think this country's vitamin business has a sales potential of $1 billion a year. Most pregnant women, babies, and children up to five years old get the vitamins they need because doctors regularly prescribe them. Many older folks, too, take vitamin pills or capsules on their physicians' advice. But in the age brackets between, say, five and fifty, use of vitamins is far less than it might be if consumers were fully convinced of their value in maintaining vigorous health.

"There's still not complete agreement among medical men, of course, that every healthy individual needs a regular dosage of vitamins to promote or maintain his well-being. It's estimated that only about 10 per cent of the population buy vitamins for such "preventive maintenance," at a cost to the average family of roughly $15 to $20 a year."

At least it can be said that the drug manufacturers are doing a fine marketing job to attain this billion dollar objective. Not only are vitamins offered in every convenient and appealing form but they are among the most beautifully packaged products in this trade. In spite of the fact that the vitamin is largely sold as an ethical product, the use of color is employed in an imaginative way. It is also probable that vitamins are providing one of the largest markets for flavors and particularly for a wide variety of flavors. For instance, Chas. Pfizer markets Viterra in the form of "tasty tabs," that is little pills with fruit flavoring which children will eat like candy. Vitamins for mothers are in the form of pink and blue capsules, that is pink for girls and blue for boys.

Two Promotions

This industry recently had an excellent opportunity of witnessing two ways of doing business. A short time ago Raymond Spector, who has been tossing hints and threats of law suit about with the greatest of ease, warned that he would sue the National Better Business Bureau over a bulletin previously issued by the BBB which had the headline "Hazel Bishop, Inc. Subject of Numerous Complaints."

The bulletin stated, "Numerous complaints had been received from indignant women who responded to advertisements of Hazel Bishop, Inc. offering for $1 a 'Beauty Box.'"

According to NBBB no answer has been received to a letter on this subject or to a subsequent follow-up letter. There was no explanation "for the continued and prolonged delays in shipments nor information as to any plans the company may have for making shipment or issuing refunds" has been offered to NBBB.

"Advertising of the Hazel Bishop 'Beauty Box' offer has prominently featured the word 'Money back guarantee' and 'everything to gain—nothing to lose.' The experience of complainants as reported to Better Business Bureaus has not justified the use of these advertising claims."

According to Mr. Spector, chairman of Hazel Bishop, the company received nearly 1,000,000 requests for its "Beauty Box" offer. This offer was handled by a professional mailing organization. He estimated that about one per cent of the outgoing orders were misaddressed, about one-quarter of one per cent forgot to include their names, one-eighth of one per cent forgot the money, and an even smaller percentage may have been pilfered.

At about the same time Abbott Laboratories was mailing refund checks to nearly 15,000 persons who sent to Abbott for a premium which failed to meet quality specifications.

Charles S. Downs, Vice-President and Director of Advertising and Public Relations for Abbott, said the company's Weight Watch premium promotion was being cancelled out completely.

"We simply cannot risk having people associate Abbott Laboratories with something which turned out to be second rate. So we are first refunding the money sent us after the Weight Watch promotion was cancelled. Then we are proceeding to refund the money sent in by people who already have received their Weight Watches.

"Since we ourselves have been disappointed in this item, we don't want our customers and friends to be disappointed too. Although negative reactions from recipients have amounted to less than three-tenths of one per cent, we are taking no chances and are making refunds to everyone—whether he is satisfied or not. Accompanying each refund check will be a letter explaining the situation and expressing Abbott's regret."

The Weight Watch is a pocket-size carrying case for Abbott's non-caloric sweetener, SUCARYL. Designed to look like a watch, the case has a pair of hands which can be moved to tally the user's daily caloric intake.

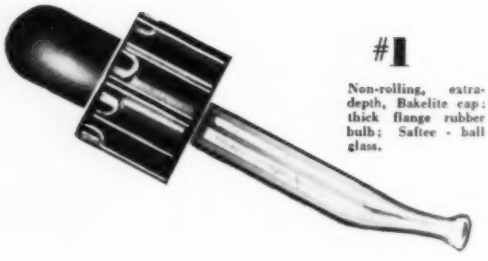
Sales Cost and Performance

Two factors in this trade are combining to multiply the number of products which the large companies of this industry are marketing. The first factor is the major trend toward company mergers and the second one is the increased trend toward self competition, that is a duplication within one company of the same product but with variations to meet certain consumer market groups or to provide for new research. An example of the latter is the multiplicity of tooth paste brands now marketed by each of the leading dentifrice companies, and in each of the large soap companies, the multiplicity of the detergent brands.

These multiplying products have been causing increasing structural sales changes in many companies. While there has been some movement in diversifying sales, consolidation, that is bringing everything under

NEW PERFECTION = DROPPING PARTS

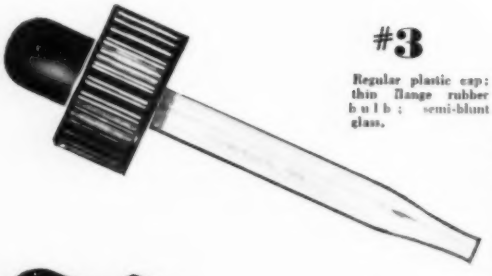
QUALITY UNIFORMITY CLEANLINESS SERVICE



#1

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; Saftee - ball glass.

By the Originators and World's Largest Manufacturers of Screw-Cap Dropping Parts



#3

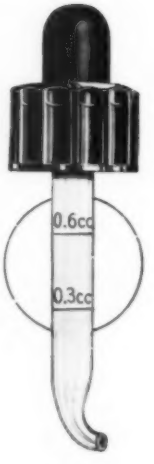
Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

Since 1931, when the screw-cap dropping part was originated by Pennsylvania Glass Products, the world-wide acceptance of New Perfection has been increasing. The fact that the New Perfection Dropping Part is the most practical and sanitary dispensing unit for liquid preparations accounts for its popularity and the steady growth of our operations is due to the efficiency with which our products are manufactured and distributed.

Our exacting standards for quality, uniformity and cleanliness guarantee that each shipment will meet your most rigid specifications. Our policy is to produce and sell the best in dropping parts—and thus merit your continued patronage in the future as we have in the past.

#4

Metal cap; oil-resisting Amekine synthetic rubber bulb; blunt glass.



#2

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; special bent glass (CALIBRATED in color)

New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

New Perfection Dropping Parts, either plain or CALIBRATED IN COLOR, can be supplied to fit your bottle or with our new Modernistic style bottles. Our bottles are available in Amber, Blue, Green or Clear glass in ⅛, ¼, ½, 1 and 2 oz. capacities. Special oil-resisting AMEKINE synthetic rubber bulbs can be supplied for use with oil products, or natural rubber bulbs for general usage.

WRITE FOR SAMPLES AND QUOTATIONS

PENNSYLVANIA GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

one stream-lined sales force has been by far the predominating movement. Just recently, Sterling Drug Company consolidated its three proprietary drug divisions, that is Chas. H. Phillips, Bayer and Centaur-Caldwell into one organization called National Brands Division. The reason for the change is summed up by the company as follows: "Consolidation will be gratefully received by our customers everywhere. One sales representative to see instead of three; one order to write up, enter and mail; one shipment to receive and check in; one invoice to process and discount; and much faster service on handling orders through new distribution centers strategically located throughout the United States."

All this seems conclusive and purposeful. Because costs in selling have been mounting so enormously it is undoubtedly very excellent from that viewpoint that Sterling has now got one sales force where it previously had three separate sales forces.

It is true that some companies in the trade have put this consolidation into effect as an economic necessity only to find out that whereas it has been working well, one result has been a strong tendency to cut out or destroy fringe products.

We are entering a period today of increasing need for creative salesmanship and sales management at the point of sale. We find increasingly that unless the value of the products, the effectiveness of its advertising and the policies of management are forcefully interpreted to the individual retailer, then a substantial part of the productive value of the manufacturer's advertising is lost.

Several recent surveys have made crystal clear the problem of the salesman at the point of sale. In the first place he averages a substantially small amount of time in the presence of the retail buyer and with the buyer's full attention. The surveys have also shown clearly that the size of the sale is influenced in an important way by whether the salesman takes the time only to show and discuss the products with the buyer, or by whether he first displays and discusses display and promotional material, and by whether he talks and explains the advertising in its direct relation to the retailer. All of this takes up a considerable amount of time and it is rare indeed, in an important store, that the salesman has time to properly present more than two or three products.

On paper and in a presentation to the board of directors, a compelling and almost non-answerable argument can be made in favor of combining a sales force for a large company with a wide and valid assortment of products.

We wonder how far these favorable reasons will continue to be justified at the point of sale.

Too Much Pay

We were startled to read a little while ago a suggestion in the food field that all promotions in the future should emanate from the manufacturer. It is true that this suggestion was inspired by the confusion and controversy arising from the Federal Trade Commission's attitude on advertising allowances and other allowances. It was said that discrimination enters into the picture when the manufacturer accepts special plans offered by the distributors.

Nevertheless, the suggestion that all promotions in the future should be developed, organized, and financed by the manufacturer seems to be very much in trend with the times.

It is the basic and disturbing thought in distribution today, that with the exception of the department store and some types of specialty retail stores, all retailing is moving in the direction of abdicating its position in the field of distribution as selling organizations.

Lead by the grocery supermarket, the retailer today is leaning more and more heavily on the manufacturer, delegating to the manufacturer step by step every single selling function and becoming merely an accessible local warehouse for the consumer.

Retailers, such as the grocery supermarkets, have not been afraid of losing their function in selling because of their monopolistic control of the last link in distribution, that is the accessible warehouse for the consumer. These stores have given up delivery, credit, personal selling, in fact every single operation that could possibly be called service to the consumer. It is true that some large chains spend a substantial amount of money in advertising but it is also true that this advertising is heavily endowed with manufacturers money and is otherwise price advertising largely of unbranded goods, for competitive store traffic reasons.

It has long been our opinion that in abdictating most of the functions of selling, that is particularly the function of creative selling, retailers are losing their right to demand such a disproportionate share of the cost of the distribution.

We do not see any reason at all why the grocery supermarket should receive the same retail discount from this industry as that extended to the department store and the drug store. The grocery store is not performing the services to the industry, to the manufacturer or the customer that is being performed by the department store or the drug store. It is the blunt truth that the grocery store is being paid for services which it does not perform, which means it is being paid too much. In this extra margin lies a very substantial and troublesome problem for this industry in the future.

Trade Advertising

National Distillers Products Corp. are planning their new advertising campaign with a merchandising viewpoint which seems to be gaining some support among other large advertisers.

That viewpoint is that no matter how vast or extensive or successful the consumer advertising campaign may be, the retailer still has a lot of weight to throw around, since he still stands between the manufacturer and his ultimate consumer.

The direction in which the retailer throws that weight, that is in favor of the manufacturer's product or negligent of it, will have a potent and maybe decisive effect on the success of the manufacturer's marketing. Also, the degree to which the retail sales

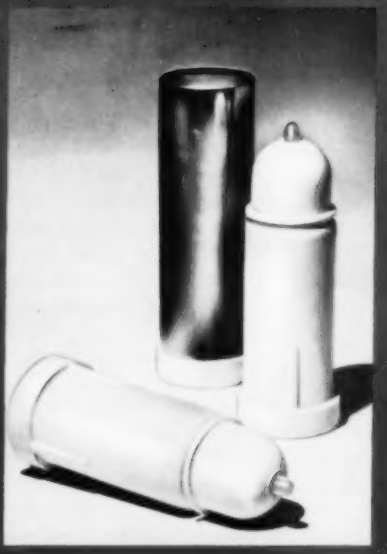
THE POPULAR

is NOW AVAILABLE IN A LARGER SIZE
because you asked for it!!!

RICHFORD
TOUCH-N-FLO*
PURSE DISPENSER

* U. S. PATENT

the 18 mm. TOUCH-N-FLO with our new Victoria Bottle.



So dramatically successful in its small plastic container style with gold-metal cap.

And so practical in a glass bottle with slip-on brass cap version.

the NEW 18 mm. TOUCH-N-FLO fits *any* Bottle *with* 18/410 *Neck*.
Write now for samples and prices.

Touch-n-Flo is ideal for cream perfumes or cream sachets, powder, liquid soaps, lotions, and deodordants — contents always flow with a touch, yet never leak.

RICHFORD
CORPORATION
404 4th AVE., NEW YORK 16, N. Y.

people apply good selling to these products means a further substantial variable factor in sales success.

Alynn Shilling, vp and advertising director of the National Distillers said, "Too often business paper advertising has been used by the industry on the basis of, 'we have to do some trade advertising, so let's find something to drop in.'

"Too few well-thought-out, well-planned campaigns have been run.

"After considerable investigation we have come to the conclusion that our trade paper budgets would be much more effectively spent if a substantial portion of them were devoted to telling retailers the fundamental ideas underlying the operation of our corporation and the development and promotion of our products.

"We expect that the advertising of business papers will help to bring about a better understanding of our company by the retail and wholesale trades and more of the feeling of kinship."

Popular Promotion

Harper's Bazaar Beauty Box advertisement in the July issue sold 10,000 orders one week after the advertisement appeared. It is expected that 50,000 boxes will be sold at the dollar price by the end of the month.

The Beauty Box was a sample box with the three shelves which contained a sample package of Evyane Cologne, Pepsodent Tooth Paste, Lanolin Plus Liquid, Helene Curtis Creme Rinse, Breck Shampoo, 5 Day Deodorant Pads, Barbara Gould Act of Beauty, Shulton Bronztan Sun Tan Lotion, Disharme Hair Creme.

Package Code

The Package Designer's Council has adopted a code of ethics.

This is a move which we think is long overdue among a group of men who have acquired professional status in a big and vital industry.

This code requires that the package designer "be qualified to provide his client with creative designing, technical guidance, and merchandising counsel from the inception of a project through its development, production and introduction to the market."

The code assures the client such safeguards as protection of confidential data and it describes approximate terms of payment. It recommends the use of written designer-client agreements to avoid misunderstandings.

We are very happy to see the adoption of this code and we are sure that it substantially increases the stature of the Package Designer's Council and its members. It is so easy for all sorts of half baked individuals, or even some not too scrupulous ones to pose as packaging experts.

Protection for manufacturers in the package industries is long overdue.

We are rather sorry that this code should include a taboo on advertising. The package designer today does not work in an ivory tower. He is not an isolated individual, but an essential part of the profession of advertising and selling. It seems to us that these designers would have had no difficulty in maintaining their professional status and at the same time could encourage their members to undertake honest and ethical advertising.

Chain Store Needs

Max Knight, Walgreen's director of merchandising and well known in marketing circles in the cosmetic industry, believes that the drug store today is now approaching that critical problem of the supermarket, that is a need for more shelf space.

According to Mr. Knight, the cosmetic industry "probably has the greatest duplication of products of any I know."

As an illustration of what happens today, Mr. Knight cited the case of a pancake make-up "developed at great expense by Max Factor which was a tremendous success. Within a few weeks there was a host of me-too imitators. I know because we made one. It didn't sell but we made it" . . . "The imitators had nothing new to say but everyone made the product. You can say that of any number of new products today."

Mr. Knight states that for the retailer, "small volume is a luxury the retailer can no longer indulge."

Here is a sample of Walgreen thinking according to Mr. Knight:

1. Many promotions are not geared for the market west of the Hudson. "Ultra-sophisticated promotions are not for us. The 'conservative' market is large and important, and some promotions should be directed out this way."

2. Walgreen likes promotions to be test-marketed, thoroughly and extensively. It likes testing at different prices, and of different kinds of advertising.

3. "Voluminous merchandising folders" are no good for retailers. Instead, there should be a few direct facts about what the factory will do for the retailer in his particular market.

4. Advertising for a chain like ours should not be ambiguous or loaded with bragadoccio that the reader won't accept.

5. More and more manufacturers are coming to us, and other chains, to discuss these problems—and long enough in advance so we can do some planning. the larger the chain the greater the advance time required.

6. Point of sale materials should be moderate in size and avoid "needless copy which the customer doesn't read." Sometimes thousands of dollars are spent on window banners which can't be used because we make our own.

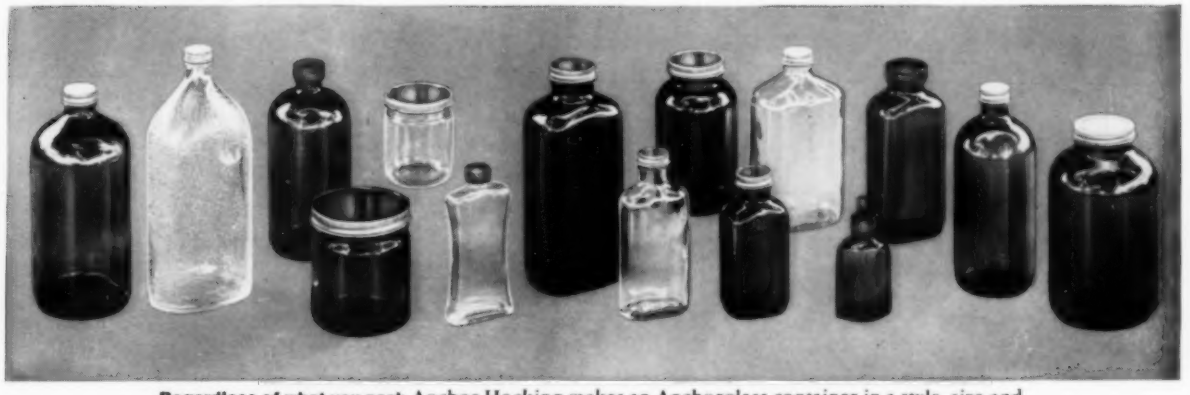
7. Newspapers come first with us. What's left may go into other channels. Especially in perfumes and cosmetics, sales ladies are very important. Many chain stores have developed sales staff and sales training more than is realized. Will there be "PMs" and commissions to sales people?

CONTROL IS

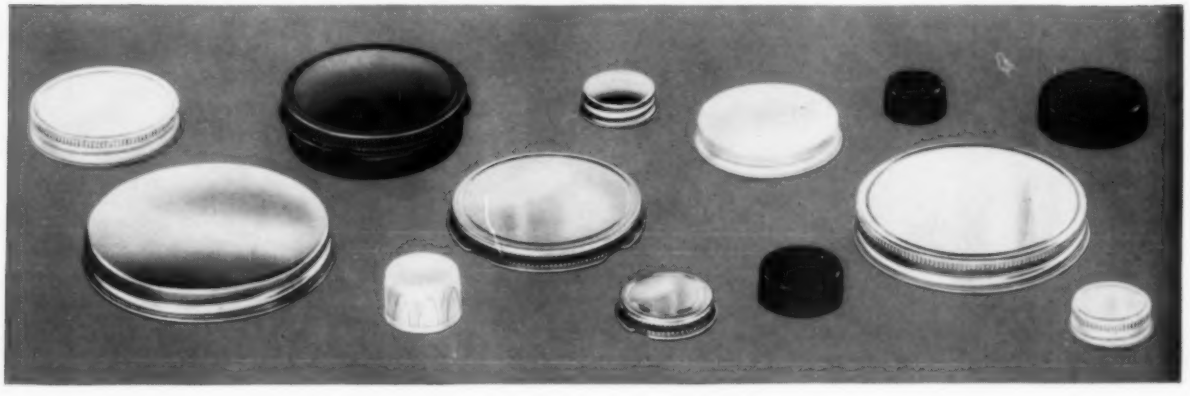
IS

ALL-IMPORTANT

with Anchor Hocking!



Regardless of what you pack Anchor Hocking makes an Anchorglass container in a style, size and color to most attractively, efficiently and economically package it. And, to seal your glass-packed products, there are Anchor molded screw caps and metal screw, lug and vacuum types available—one or more of which will completely satisfy your diverse and specialized requirements.



THE controls applied throughout your production and packaging operations are all-important to you. By the same token, the manufacturing controls employed by Anchor Hocking are very important to you, also.

Anchor Hocking exercises literally hundreds of exacting controls, tests and checks daily in the manufacture of its glass containers and closures. From the selection of all raw materials used to the final inspection, every operation is under meticulous control.

And all of this control, involving highly trained chemists, bacteriologists, engineers, other technicians and personnel, is done but for one reason. And that is, to provide you with uniform, high quality, dependable Anchorglass® containers and Anchor® screw, lug, vacuum, metal and molded closures that will give you high-speed, dependable production and protection.

ANCHOR HOCKING

GLASS CORPORATION *Lancaster, Ohio*

NEWS IN PACKAGING...

Drug, Cosmetic Tubes at Record

Increased use of collapsible metal tubes for pharmaceuticals and dentifrices raised shipments of fold-up containers to 582,902,784 units for the first half of 1956, the highest six-month level in the tube industry's history, according to a report by the Collapsible Tube Manufacturers Council.

Pharmaceuticals and dentifrices accounted for 423,223,200 units or 71 per cent of the six-month figure. Total for all drugs and toiletries was 494,713,584 units, 17 per cent above the 1955 figure.

Discussing the mounting demand for metal tubes in the packaging of medicinals and pharmaceuticals, Lester B. Platt, executive secretary of the Council said:

"The constant entry into the market of new and improved preparations, especially in antibiotics, and an expanding population promise to bring the metal tube into even greater prominence as a convenient and sanitary dispenser. The metal tube has made possible world-wide distribution of antibiotic preparations without fear of contamination or loss of drug potency."

Ninety per cent of today's prescription drugs were unavailable or unknown ten years ago, he said, and he cited figures to show the steadily growing role of the fold-up tube in pharmaceutical packaging.

"In 1947, tube production for pharmaceuticals totaled 107 million units," he said. "In contrast, production for the first six months of this year exceeded 118 million units."

Nasal Spray Developed

Culinating many years of research, a nasal spray has been developed by the Gebauer Chemical Company of Cleveland, according to an announcement by the company. There is no chance that the medication will reach the bronchial tubes or other areas not to be treated, the company states.

While the present solution is a safe, soothing spray for relief of nasal irritation, it can be adapted for many other medicaments of similar nature, with or without the use of ephedrine, according to the announcement.

Helene Curtis Packaging Dir.

Carl Goldschrafe has been appointed to the newly created post of director of packaging for Helene Curtis Industries, Inc., according to Arthur M. Adler, vice-president.

WILLIAM M. SCANLON

Mideastern Rep for Kiefer

William M. Scanlon has been appointed Mideastern representative for The Karl Kiefer Machine Co., and has established headquarters in Philadelphia. He will cover eastern Pennsylvania, Delaware, District of Columbia, Maryland, Virginia and southern New Jersey.

Knox Glass Appointments

R. K. Webb has been appointed plant manager of the Gas City, Ind. plant of Knox Glass, Inc., according to J. B. Shimer, manufacturing manager, who also announced the appointment of R. R. Simpson as plant manager of the Knox, Pa. plant, replacing Mr. Webb.

Barr's Eastern Sales Mgr.

Leonard S. Baer has been named Eastern sales manager for G. Barr and Co., according to Douglas Atlas, vice-president. Mr. Baer will be in charge of the company's Eastern sales, with production and distribution coordinated through the New York, Chicago, and Los Angeles plants. His office will be in the firm's Bronx, New York, plant.

LEONARD S. BAER

O-I Promotes Three Key Exees

Promotions for three key executives on the production staff of the Owens-Illinois Glass Company's Glass Container Division have been announced by C. G. Bensinger, company vice-president and president of the Glass Container Division.

The announcement followed Mr. Bensinger's appointment as division president, a new position, in which he will supervise the company's glass container and closure operations in the United States.

Richard A. Cosh, O-I vice-president and general factories manager of the Glass Container Division, has been named assistant general manager of the division and a member of O-I's Planning and Executive Research Committees.

Miles G. Beishline, division vice-president and production manager, will succeed Mr. Cosh as division factories manager and Eliot Marr, manager of the Los Angeles glass container plant, will transfer to Toledo as division vice-president and production manager, succeeding Mr. Beishline. Mr. Beishline and Mr. Marr will also serve on the division's research and directing committees.

Crown Cork Training Course

Eleven new regional sales representatives of the Crown Cork & Seal Company's Crown and Closure Division recently completed a comprehensive indoctrination and training course in Baltimore headquarters.

Samuel V. Tuttas, division manager of sales, and William R. Fox, division field sales manager, directed the course. Richard W. Beeler, division manager of sales development, took part in several of the sessions.

Sales representatives participating in the course, and division district sales offices where they have been assigned, are: C. V. Schmidt and Dale Howard, New Orleans; John J. Mohan and Dale L. Rife, Cincinnati; Don White and Halcon Robertson, Leeds, Ala.; W. B. Dennis, Orlando, Fla.; J. J. David, Philadelphia; Theodore R. Buttrick and Karl Zint, Detroit; and Robert Pfretzschner, St. Louis.

Gair Appoints Marteny

William W. Marteny has been appointed a technical advisor in the chemical pulp and paper production department of Robert Gair Company, Inc., C. S. Huestis, director of the department, has announced.

Squeeze Bottle for Vitamins

"Plasti-drops," reportedly the first multivitamin product containing both oil and water-soluble vitamins to be marketed in a plastic bottle is packaged in a new dropper-top polyethylene

squeeze container made by the Mills-plastic Division of Continental Can Company.

The bottle permits accurate, drop-measured doses to be dispensed with one hand. The built-in drop dispenser top makes the bottle spillproof, preventing product loss when tipped or dropped. "Plasti-drops" liquid vitamins are made by Table Rock Laboratories, Inc. of Greenville, S. C.

Develop Can for Powdered Products

Continental Can Company has perfected a metal can, Savorlock, to meet the specific packaging needs of many powdered and granulated products. Savorlock round, lock top cans come in two consumer sizes, 204 x 315 and 305 x 507. While the lock top makes it simple for consumers to open and reseal the can, the covers are fitted with a pulpboard liner and glassine tamper-proof seal to provide long shelf life, even for hygroscopic products.

The containers were styled and proportioned by industrial designers to provide greater space for lithographed design and text on the selling label. Filling and capping of Savorlock cans is essentially the same operation as the filling and capping of glass jars.

Joins Patone Press

John J. Segreto has joined Pantone Press, New York, color and display specialists, to direct sales of the lithographic department.

Pre-packed Bayer Display

A pre-packed floor stand display featuring Bayer Aspirin, described as a novel and highly profitable point-of-sale merchandising aid, is being offered by National Brands Division. Basic purpose of the promotion is to stimulate impulse sales.

Fitted into the merchandise compartments are six dozen Bayer Aspirin 100s; four dozen Bayer Aspirin 24s; and two dozen of the newly introduced flavored Bayer Aspirin Children's Size 48s.

Retailer response to the factory-packed display has been exceptionally favorable throughout the country, according to A. J. Burns, vice-president in charge of sales for National Brands. While 70,000 units were stocked in anticipation of wide demand, he said, "a supply problem may develop in light of the popularity of the promotion at so early a date."

Lithographed in Bayer's familiar cocoa brown and yellow colors, the floor stand is 42 inches high, 19 inches wide and 10 inches deep. It consists of a merchandise section and poster, both of which slide into the base, with the entire unit telescoped to fit into its shipping carton.

Anchor Hocking Personnel Changes

N. J. Jensen, formerly head of Anchor Hocking Glass Corporation's Philadelphia office, has become manager of the Rochester, N. Y. office. P. E. Mallory is the new manager of the Philadelphia office.

J. H. O'Keeffe has been named manager of the New York office, and L. S. McAllister, manager of the Cincinnati sales office.

Ice Blue Aqua Velva's exclusive formula was created by J. B. Williams' staff of research chemists with the help of perfume experts from Van Ameringen-Haebler, Inc. Bottle and carton were designed by Donald Deskey Associates. Owens-Illinois supplied bottles and caps.

Vitamin Jar for Family Table

To create additional over-the-counter sales of its Gevral brand of vitamin-mineral supplement, Lederle Laboratories Division is introducing, at no increase in price, a graceful, decorative

Gevral Jubilee Jar especially designed for serving vitamin capsules at the family dining table.

Made of attractive opaque glass with a sturdy white plastic cap, the Jubilee Jar contains 100 Gevral capsules. When placed on the breakfast table, it is a natural reminder for the whole family to "take their vitamins." A simple gold label with classic Roman lettering in blue adds to the appearance of the jar which enhances the decor of any table setting, regardless of color scheme. The jar can also be re-used as a decorative container for food, candy, condiments or toiletries.

Gevral Jubilee Jars are available in lots of twelve with an eye catching plastic stand for counter or window display. Each jar is individually protected in a cylindrical acetate package.

Breeback in New Post

R. H. Breeback has been appointed manager of technical services, sales department, machinery division, Crown Cork & Seal Company, Inc. He formerly headed the machinery division's beer design and engineering section.

Asst. Plant Mgr. of Gair

W. D. Arbuthnot has been appointed assistant manager of the Fibre Board Container Division, Richmond, Va., of Robert Gair Company, Inc., William T. May Jr., vice president in charge of container operations, has announced.

Deodorants with G-11®

(Hexachlorophene U.S.P.)

remove the cause of body odor

Soaps, detergents, creams, colognes, sticks and lotions containing G-11 are making dramatic sales increases because they combat the fundamental cause of body odor.

Body odor, particularly underarm odor, is caused by the action of skin bacteria on perspiration. Research has shown fresh perspiration to be odorless until it is contaminated with skin bacteria. G-11 combats these bacteria and thus removes the basic cause of the odor.

G-11 remains on the skin, even from soaps which are thoroughly rinsed off with water. Thus the deodorant action persists for days. Persons who have used deodorants with G-11 for three and four years show no immunity to their action.

Over seventy scientific articles, mostly by independent researchers, have been published over the last ten years attesting to the antibacterial and deodorant performance of G-11.

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Patent THOUGHTS AND TRENDS

by Thomas Cifelli, Jr
PATENT ATTORNEY*

ANOTHER QUICK LOOK AT RECENT PATENT AND TRADEMARK DECISIONS

Continuing the experiment begun last month we shall take some rather quick looks at a comparatively large number of matters rather than a deep look at a few items. As before, we shall confine ourselves to recent holdings by the Federal Courts and the Patent Office Tribunals.

If the response is unfavorable or negative, this experiment will be abandoned and we shall revert to previous practice. If the response is favorable, it is planned to present both types of articles in the future.

I. PATENTS

Patent Lawyer Becomes Patent Judge

For the first time in its long and honored history the United States Court of Customs and Patent Appeals numbers among its judges one who was trained as a patent lawyer. Last July, Giles S. Rich became a judge of this court. Judge Rich had made an enviable name for himself in the patent profession, having given freely of his time in connection with the legislation which ultimately became the Patent Act of 1952. Judge Rich is also a Jefferson Award winner of the N. J. Patent Law Association. The most recent winner of this award was Judge Learned S. Hand who is revered and respected for his decisions involving patents.

Patent Examining Procedure Revised

The large number of persons who figuratively had to stand by for long periods of time, in many cases upwards of a year, to receive replies from the Patent Office after answering the first Office Action, may well breathe easier these days. Effective August 7, 1956 the Commissioner of Patents amended the examining procedure so as to free these "second action" cases from the bottom of the pile. The Patent Examiners were reminded however to give first consideration to acting on new cases within nine months from their filing dates.

*Richards and Cifelli, Newark, New Jersey.

Patentability Standards

The U. S. Court of Appeals for the 2nd Circuit (which includes N. Y.) recently held that Section 103 of the Patent Act of 1952 restores standards of patentability to what they were some 30 years ago. The U. S. Supreme Court has been asked to review this holding.

Carter Shaving Cream Patent

The U. S. Supreme Court has also been asked to review the findings of the U. S. Court of Appeals for the 4th Circuit which held valid the Spitzer et al. patent No. 2,655,480. The lower court also held that Colgate-Palmolive had misappropriated Carter's trade secrets.

Patent Notices

It is more or less common knowledge that the reason that patent notices are given on patented articles is to protect the right of the patentee to obtain damages in the event his patent is sustained. If no such notice or an improper notice appears, then damages cannot be obtained until actual notice is given to the infringer. Consequently, proper patent marking is important.

An Indiana federal court recently held that where machines were marked with a plate bearing "patent pending" while the patent application was pending and after the patent was issued the same plate continued to be used with the addition of the patent number, this was an insufficient marking to satisfy the statute. Obviously, strict adherence to the statute is called for. All that the statute requires is that the word "patent" or the abbreviation "pat.," together with the number of the patent, be used.

II. TRADEMARKS

Caro v. Coro

A Mississippi federal court has held that Caro on jewelry items is a colorable imitation and infringement of Coro used on jewelry also.

Inflata Bra v. Inflation

The Commissioner of Patents has held that Inflata Bra is likely to be confused with Inflation, both marks being for brassieres.

Temprite v. Temprite

Confusion was held unlikely from the use of the same mark on men's and boys' jackets on the one hand, and on mechanical refrigerating apparatus on the other.

Sun-Lashes

Commissioner of Patents Leeds refused registration of Sun-Lashes for artificial lashes for protecting eyes from the effects of the sun's rays because she considered this term to be the only apt description of such lashes. Accordingly, registration was refused on the ground that the mark was incapable of performing the trademark function of indicating origin.

Charmisette v. Chamoisette

In a trademark opposition the Commissioner of Patents held that Charmisette on scarfs was not likely to be confused with Chamoisette.

Bear State v. Bear

The Commissioner of Patents held that the dominant "Bear State" with a bear standing on the map of California, for use on fresh deciduous fruits and fresh grapes, is not likely to be confused with the dominant "Bear" with the bear holding a map of California, for use on fresh vegetables.

Tommie-Teens v. Tommy Tucker

The Commissioner of Patents held that Tommie-teens for ladies' and girls' pajamas, etc. is not likely to be confused with "Tommy Tucker" for boys' shirts and blouses.

Musical Tune-O v. Tuneo

"Musical Tune-O" as a service mark for an entertainment service in the

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nature of a musical quiz game played over the radio was held by the Commissioner of Patents likely to be confused with Tuneo, for a musical game.

Perma Seal v. Permacel

Perma Seal, used on a caulking compound, was held by the Commissioner of Patents likely to be confused with Permacel, used on pressure-sensitive adhesive tapes and the like.

Yard-Man v. Ariens Yardster

The Commissioner of Patents held that the prior use of "Yard-Man" on lawn mowers before the first use of "Ariens Yardster" on garden tilling and cultivating implements with mower attachments would lead to the conclusion that the potential purchasers of the latter upon seeing "Yardster" thereon will be likely to believe they are part of the Yard-Man line.

Travel-Twin v. Alligator Travelweight

The Commissioner of Patents held that the purchasing public upon seeing "Travel-Twin" for combination topcoats and overcoats is not likely to believe they eminate from the manufacturer of "Alligator Travelweight" raincoats.

Comminutor

"Comminutor" was held not registrable for apparatus to screen and comminute sewage since it is a recognized and well understood name for such apparatus, in the opinion of the Commissioner of Patents.

Emebal v. Ethobral

The Commissioner of Patents held that Emebal sedatives and Ethobral sedatives are not likely to be confused inasmuch as they are dispensed only on prescription and the likelihood of confusion must therefore be considered at the physician-pharmacist level rather than at the level of the public.

Joyeux Ete v. La Joie de Jean Patou or Joy

The Commissioner of Patents held that the subject marks were not likely to be confused even though used on the same products such as toilet waters.

Vistac v. Vistone

Vistac for use with hydrocarbon polymers was held by the Commissioner of Patents not likely to be confused with Vistone for additives in lubricants, the Commissioner finding that the goods do not move in the same trade channels.

Fortogenol v. Fortogen

The Court of Customs and Patent Appeals held that Fortogenol is substantially identical with Fortogen but nevertheless that there was no likelihood of confusion in using these substantially identical marks on multivitamin and mineral products for human use in one case and for veterinary use in the other case. The Court felt that so far as foods and medicinal preparations are concerned those designed for animal use are distinct from corresponding preparations intended for human beings.

17-4 PH

The Commissioner held that this was merely a grade or type mark to differentiate specific grades of products and that grade or type marks used only as such, advertised as such, and recognizable only as such are not registrable.

Dynol v. Dianol

Confusion was held likely between Dynol for a moth-proofing composition and Dianol for insecticides and antifouling compounds, the Commissioner of Patents being impressed by the fact that the owner of the latter mark had expanded its line of products in the past and therefore there was a probability of future expansion. The addition of a moth-proofing composition to its line was felt by the Commissioner to be a normal and natural expansion, with resulting consumer confusion.

Shush v. Hush

Shush for a combination package containing disposable syringe, disposable douche bag and douche chemical preparation for use therein was held by the Commissioner of Patents not likely to be confused with Hush for toilet preparations including deodorants, lipsticks and hair dyeing preparations.

RECENT PATENTS

2,745,785—**Am. Home Products—Therapeutic Composition Comprising Tabular N,N′-Dibenzylethylenediamine D-Penicillin.**

2,745,786—**Soc. Promidel (France)—Producing Stable Theophyllinic Aerosols.**

2,745,787—**Am. Cyanamid — Purification of Vitamin B_{12}.**

2,745,796—**Aschaffenburger Zellstoffwerke—Vanillin Recovery.**

2,745,826—**Olin Mathieson — Thiourea Complexes Preparation.**

2,745,829—**Sterling Drug — 3 - Hydroxy-11-Ketocholanic Acid.**

2,745,830—**Ciba — 4:4′ - Diaminostilbene Disulfonic Acid-(2:2′).**

2,745,831—**Burroughs Welcome—Reaction Products of Unsaturated β-substituted α-Arylacrylonitriles and Guanidine.**

2,745,836—**Sterling Drug—Tertiary-Aminoalkyl - α,α - Diaryl - Succinimides.**

2,745,839—**Farbwerke Hoechst — N - isonicotinoyl-Hydrazones.**

2,745,845—**Eli Lilly—1-Formyl-2-Dialkoxymethyl-Succinic Acid Esters.**

2,745,851—**Sterling Drug—Oxidation of Progesterone.**

2,745,852—**Farbwerke Hoechst — $\triangle^{4\cdot16}$ - Pregnadiene - 21 - Ol - 3, 20-Diones.**

2,745,866—**G. D. Searle—α, β-Diaryl Substitution Products of α-Alkenonitriles.**

2,745,870—**G. D. Searle—Polyalkoxy and Polyalkanoyloxy Derivatives of α, β Diphenylalkanones.**

2,745,879—**Research Corp. — Hydroxy-Hexahydronaphthalenes.**

2,746,900—**Chas. Pfizer — Hypnotic Agent.**

2,746,901—**Am. Home Products—Glycinamide Salts.**

2,746,902—**Upjohn—Endomycin.**

2,746,903—**Armour — Liver Anti - Anemia Factor.**

2,746,904—**Upjohn—17 - Hydroxycorticosterone, 21-Beta-Cyclopentyl Propionate.**

2,746,905—**Warner-Lambert — Dihydroacetic Acid Dental Compositions.**

2,746,928—**Calif. Research—Germicidal Detergent.**

2,746,959—**Am. Home Products—Diphenylethylenediamine - Penicillin Salt.**

2,746,960—**Norwich Pharmacal — Chemotherapeutic Nitrofurans.**

2,746,961—**Burroughs Wellcome — Purines from 6-Chloropurine.**

2,746,962—**Hoffmann-La Roche — Morphinanes.**

2,746,963—**Parke, Davis — Chloroquinolinols.**

2,746,964,7—**Lakeside Labs.—Piperidines.**

2,746,968—**Hoffmann-La Roche — Diacylaged Hydrazines.**

2,746,969—**Schering — Aminoalkylbenzenes.**

2,746,970—**Monsanto—2,2′ - Thiobis(4 - Alkyl - 5 - Thiazole Carboxylic acid.**

(Continued on page 414)

Quality in chemicals is a lot of little things

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NEWS...

Encouraging Science Careers

To encourage more of America's youth to follow careers in science, the Manufacturing Chemists' Association, Inc. will conduct a five-year nationwide education program which will cost an estimated $1,000,000.

Commenting on reasons for the new program, General John E. Hull (USA ret.), president of MCA, said:

"In June we published the results of a study which shows that the United States will be short 457,000 scientists and engineers by 1965. The chemical industry alone will be short 93,000 scientists and engineers. Unless efforts are taken to reduce this shortage, our economic and technological growth will slow down. We are undertaking our new science program with the fervent hope that it will help to alleviate the shortage.

Deakins Is Natl. Brands V.P.

Felton M. Deakins has been appointed a divisional vice-president and product manager of the National Brands Division of Sterling Drug, Inc., according to James Hill Jr., chairman of the board.

With Sterling since 1931, Mr. Deakins was eastern sales manager for the company's Centaur-Caldwell Division from 1947 to 1954. In November, 1954, he was named manager of the San Francisco branch of Sterling, in charge of operations of the company's proprietary divisions in the western states. The National Brands Division, was an outgrowth of the San Francisco operation.

FELTON M. DEAKINS

Film Describes Miltown

"Rx—Miltown for Everytown," a full-color, sound slide film, which presents a general outline of the development, indications and usage of the tranquilizer, is being offered by Wallace Laboratories to wholesalers for showing to drug salesmen. Accompanying each print of the film are giveaway booklets.

"The film enables the wholesaler to pass on general information about Miltown to the retail pharmacist," R. R. Bonnell, Wallace's medical service manager, has stated. "In view of the tremendous market potential—particularly since Miltown may be given over long periods of time without need for constant medical supervision—it is advantageous for wholesale salesmen to detail Miltown on all calls. The film will be an important aid to sales."

Copies of the film may be obtained by writing to Mr. Bonnell at Wallace Laboratories, 2 Park Avenue, New York 16.

DR. CHARLES D. HENDLEY

Schering Appoints Hendley

Dr. Charles D. Hendley has been appointed to the pharmacology department of Schering Corporation, according to an announcement by Robert E. Waterman, vice-president. Prior to joining Schering, Dr. Hendley was pharmacologist at Wallace Laboratories.

Parke, Davis Promotes Moore

Dr. Alexander M. Moore has been promoted to the newly created position of assistant to Dr. Leon A. Sweet, vice-president, Research Division, Parke, Davis & Company, who has announced that Dr. George W. Moersch has succeeded Dr. Moore as administrative fellow in charge of the Parke, Davis fellowship in medicinal chemistry at Mellon Institute, Pittsburgh.

DR. RAYMOND W. CUNNINGHAM

Pharm. Development Director

Dr. Raymond W. Cunningham has been named director of pharmaceutical development of the Fine Chemicals Division, American Cyanamid Co., according to A. B. Clow, general manager of the division.

Formerly assigned to Cyanamid's Research Division, Dr. Cunningham planned and organized the pharmacology research department at the firm's Lederle Laboratories. Under his direction, this department was charged with testing and developing new therapeutic agents.

During his tenure at Lederle, he was active in the study of Aureomycin chlortetracycline and the antispasmodics, Artane and Pathilon.

Industrial Toxicology Lab.

A new $150,000 industrial toxicology laboratory has been completed by Industrial Bio-Test Laboratories, Inc. in Northbrook, a Chicago suburb, Dr. Joseph C. Calandra, president of Bio-Test, has announced.

"The new Bio-Test laboratories offer industry a practical solution to toxicity and related problems through the study of the toxicological and physiological properties of the new substances which industrial research is creating every day," said Dr. Calandra.

W&B Marks 101st Year

Founded in 1855 by Anton Will, grandfather of the current president, Howard C. Will, the Will & Baumer Candle Company completed its 101st year of business on August 31. Besides supplying wax compounds for cosmetic and pharmaceutical manufacturers, the firm's products include more than 125 different styles of church and decorative candles, and it buys about one-quarter of the United States' annual beeswax imports.

H. C. McKenzie, second from right, president of the Ortho Pharmaceutical Corporation, congratulates newly promoted executives. Left to right, Benton J. Todd, who has been elected president of the Ortho Research Foundation; Foster B. Whitlock, who has become executive vice-president of the company; and Du Pont Murphey Jr., who has been elected sales manager. Portrait in background is of of Philip B. Hofmann, chairman of the board.

Homage to an "Iron Man"

"Iron man" of the essential oil industry, Jacob Manheimer, was honored at a party Sept. 5, marking the eightieth anniversary of the beginning of his legendary career. In the offices of the firm he established, J. Manheimer Essential Oils, 21st Street, New York, his employees and friends in the trade paid tribute to the industry pioneer who on August 16 was 92 years young.

Exemplifying Horatio Alger qualities even before this character was conceived, twelve-year-old Jacob Manheimer started on September 6, 1876 with the Leo Bernard Essential Oil house on New York's Maiden Lane as an office boy. To earn his weekly salary of two dollars, he was at work each morning at 5:30. Six years later, during which time he had studied at Cooper Union, he became a salesman. Salary: five dollars a week and no commission. At 21 he bought the firm.

Presumably as a concession to the mere mortals who are today in the industry, Mr. Manheimer is no longer at the office at 5:30. Each morning he arrives there at 8:15. And the man who established his firm five years before the historic flight at Kitty Hawk prefers to travel by plane when on business trips. Perhaps this is because time also flies, and Mr. Manheimer keeps moving fast as he continues to crowd many lifetimes into one.

Emerson Gen. Sales Mgr.

Richard J. Golden has been appointed general sales manager of the Emerson Drug Company, it has been announced.

Squibb Assoc. Med. Directors

Drs. Harry W. Rudel and Richard R. Prouty have been appointed associate medical directors of E. R. Squibb & Sons, according to Dr. A. Dale Console, director of Squibb's Medical Division.

Prior to his appointment, Dr. Prouty was a resident in internal medicine and a fellow in cardiology at the E. J. Meyer Hospital, Buffalo, N. Y. He served two years with the U. S. Air Force as an aviation medical examiner and flight surgeon.

Since 1952, Dr. Rudel has been associated with other pharmaceutical companies and engaged in research on steroids, anti-inflammatory agents, central nervous depressants and anaesthetics.

Warner-Lambert Moves Hdqrs.

Warner - Lambert Pharmaceutical Compant has shifted its central administrative offices from New York to its newly erected building in Morris Plains, N. J.

Asst. to Wampole Pres.

James T. Bollettieri has been appointed to the newly created position of assistant to the president of Henry K. Wampole & Company, Inc. In this position he will specifically be responsible for coordinating sales, promotion, and advertising activities.

Warner-Chilcott Adv. Mgr.

William D. Gulick has been appointed advertising manager of Warner-Chilcott Laboratories, according.

Polio Vaccine Sales

Pitman-Moore Company has reported that Salk polio vaccine sales have increased since Federal distribution controls were abolished. Largest shipment was 531,873 doses to the State of Illinois, rushed to Chicago to fight a polio epidemic. In addition, 36,873 cc's of the vaccine was shipped to the State Health Department in Springfield, Ill. and an additional 99,000 doses to Chicago.

Another large shipment was 450,000 doses to the State of Massachusetts. A Pitman - Moore spokesman said increased shipments to wholesalers, druggists and physicians indicate that the public is becoming convinced of the value of the polio vaccination program.

Van Campen with Cutter

Dr. Marcus G. Van Campen Jr. formerly associate director of research for the Wm. S. Merrell Company, has joined Cutter Laboratories as vice-president for research, it has been announced. He succeeds Dr. Howard M. Winegarden, recently retired.

On Amer. Home Products Bd.

Gilbert S. McInerny, who joined the legal staff of American Home Products Corporation in 1941, has been elected a director of the company, Alvin G. Brush, chairman, has announced.

Arnar-Stone Appointment

Homer A. Baldridge has been named southwest district manager for Arnar-Stone Laboratories, Inc. He will headquarter in Oklahoma City.

Shulton Sales Representative

William Palmer has been appointed sales representative in the New York metropolitan area for the Fine Chemicals Division of Shulton, Inc., according to Richard E. Brainard, vice-president in charge of the division.

WILLIAM PALMER

N. Y. Cos. Chem. Meeting

Skin changes from birth to old age will be discussed by Amos Light, research pharmacologist of Wellcome Research Laboratories, when the New York Chapter of the Society of Cosmetic Chemists resumes its monthly meetings September 26 in the Brass Rail Restaurant, New York.

Topic of his talk will be "Peripheral Vascular and Absorptive Changes in the Aging Skin," and he will use slides to demonstrate work done in his laboratory on penetration and absorption through the skin. He will also outline the probable direction of future research in the field of peripheral circulation.

Pfizer Has Reserpine License

Chas. Pfizer & Co. Inc. has announced that it has acquired a license from Ciba, Ltd. under the latter's U. S. Patent No. 2,752,351, covering crystalline reserpine and dosage forms containing the crystalline compound. Under terms of the license, purchasers of Pfizer's crystalline reserpine or triturations may use and sell these materials throughout the world without licensing or royalty payments.

Dragoco Export Mgr. in U. S.

Herbert W. Rassmann, export manager of Dragoco of West Germany, has arrived in this country for a three months stay. He will assist Dr. Henry Gribou, manager of the U. S. division of the company, in coordinating the activities of the U. S. division and the home office.

Mr. Rassmann, who has been with Dragoco since 1948, has a wide knowledge of the perfume and flavors industries. Since 1953, he has been export manager for the U. S. and England and has spent considerable time in both countries. During his stay here he will be at the New York office of Dragoco, 432 Fourth Ave.

HERBERT W. RASSMANN

Winners of the Old Spice Father's Day Window Contest conducted by Shulton are selected from among the thousands of entries. Judges are, left to right, Frazer V. Sinclair, publisher of Beauty Fashion; George Klinger, managing editor of Drug Topics; and Lester Gaba, window display columnist of Women's Wear Daily. Interested onlookers are Miss Maxine Rowland, Shulton's advertising manager, and Frank N. Carpenter, vice-president of the company.

Wyeth Names Ferrier

Harold L. Ferrier has been named to the newly created position of director of the clinical associate section of Wyeth Laboratories, it has been announced. With Wyeth more than twenty years, Mr. Ferrier has served as district manager at Minneapolis and as territory manager at Mankato and Rochester, Minn. For five years he represented Wyeth at the Mayo Clinic.

Lilly's Asst. Merch. Dir.

Gerald B. Nelson, with Eli Lilly and Company fifteen years, has been named assistant director of the Merchandising Division. For the past two and one-half years, he has been administrative assistant in the division. Previously he was manager of the product promotion and sales training department.

GERALD B. NELSON

Factor Enlarges Pharm. Div.

Max Factor & Co. has enlarged the operation of its recently created Pharmaceutical Division to include handling of specialty products, Max Factor Jr., president, has announced. The division, to be known as the Max Factor & Co. Pharmaceutical and Specialty Division, will function independently, have its own personnel as well as sales, distribution, advertising and discount structure, said Mr. Factor.

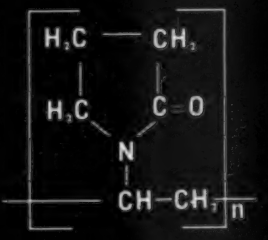
He also announced that the company has purchased all outstanding shares of Lee Limited, owner of the trademarks "Sof-Set," "Sof-Set No-Lac," and "Dri-Mist." These products will be manufactured, merchandised, and distributed by the new division. Previously, Lee Limited and a subsidiary of Max Factor & Co. had been in partnership for distribution of Sof-Set and Dri-Mist products.

Raymond Labs Sales Mgr.

J. J. Mikschl has been appointed sales manager of Raymond Laboratories, Inc. and will administer sales of Raymond's commercial chemicals which are sold nationally through representatives of the M. H. Baker Company of Minneapolis. J. C. Zemlin, acting sales manager, will remain as director of manufacturing research in Raymond's research and development department.

PVP

(polyvinylpyrrolidone)



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APPLICATIONS

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PVP in Cleansing Products—acts as a foam stabilizer, prevents soil redeposition and improves hair management in shampoos. Is a foam-builder and protective colloid in toothpastes. Improves emollient and detergent action in waterless cleansers.

Pharmaceutical Industry

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WALTER C. DEAKYNE JR.

Pfizer to Market Cycloserine

With its new drug application for cycloserine having been accepted by the FDA, Pfizer Laboratories plans to make the antibiotic available to hospitals in the immediate future. As the FDA permits use of cyc'oserine only in hospitals, it will not be available for treatment of out-patients.

Since 1955, Pfizer has been supplying cycloserine to the U. S. Veterans Administration for testing against tuberculosis and has cooperated with the V.A. in its investigational program. Pfizer researchers believe that the antibiotic will be especially useful in conjunction with isonicotinic acid hydrazide, which the company markets as Cotinazin. In combination with other antibiotics, cycloserine has shown promise in combatting severe, resistant urinary infections.

Pfizer's announcement stated that cycloserine will not be marketed as the base, but in pure, crystalline form as the tartrate.

Named to Armour S.A. Unit

Harold A. Orlove, formerly technical sales liaison representative for Armour Laboratories, has been appointed acting general manager of Laboratorios Armour de Argentina, with headquarters in Buenos Aires, succeeding Loyal C. Maxwell, who has been named technical advisor.

James Tarvin has been named general plant superintendent of Laboratorios Armour. He was formerly a division superintendent of the pharmaceutical manufacturing division in Kankakee.

W,C &D Representing Aquadyne

Whittaker, Clark & Daniels, Inc. are representing the Aquadyne Corporation, Clark, N. J., as distributor for Aquadyne and Hydrodyne, according to an announcement.

Heyden Sales Executives

Walter C. Deakyne Jr. has been appointed assistant general sales manager of Heyden Chemical Corporation, it has been announced by Thomas M. O'Neil, vice-president in charge of sales and marketing. Mr. Deakyne will report to F. A. Degener, general sales manager.

Richard H. Boggs has been appointed export sales manager of Heyden and its Western Hemisphere subsidiary, Heyden Export Corporation, according to Mr. O'Neil.

Searle Has Radioactive Lab.

To broaden the scope of its experimental work, G. D. Searle & Co. has installed a radioactive-tracer laboratory. The Atomic Energy Commission in Oak Ridge will supply Searle with radioactive substances, which will be used under conditions approved by the A.E.C., and the Illinois State Board of Industrial Hygiene.

Dr. Albert L. Raymond, vice-president in charge of Searle research, has said that the new facility will operate under the general direction of Dr. Victor A. Drill, director of biological research. Dr. Robert A. Ranney, an expert in radioisotope research, has been brought to Searle from the university of Colorado Medical Center in Denver to actively supervise the work. Dr. Ranney also has had experience in radioisotope work at the university of California research center in Berkeley.

Winners of the Trip to Europe Contest of Organon, Inc. as they are about to board the plane at Idlewild airport for their flight to Amsterdam, Holland. Left to right, Bruce Harris, winning region manager, Duane C. Andrews, winning sales representative, both from California, Paul J. van Helden Jr., president of Organon, and Remo Farias, general sales manager. The trip, an annual event of the Organon sales department, includes a two-week stay in Holland, with a visit to the N. V. Organon plant in Oss, and a side trip to Paris.

RICHARD H. BOGGS

Vick Overseas Expansion

Because of the growth of foreign sales during the past decade, Vick Chemical Company plans increased emphasis on international operations, and two executive changes connected with such plans have been announced.

E. P. Anderson, formerly general manager of Vick International Division, has been elected vice-president of Vick Chemical Company and, in his new position, will be responsible for all overseas operations of the Vick enterprise. G. B. McClure Jr. has replaced Mr. Anderson as general manager of Vick International, assuming responsibility for foreign sales of Vick proprietaries.

Consolidate Hooker Offices

Consolidation of district sales offices of Hooker Electrochemical Co. with the Durez Plastics Division and the Niagara Alkali organization has been completed, according to an announcement by Robert E. Wilkin, vice-president and director of sales. Durez Plastics sales offices will continue to operate as a divisional entity even though physically housed with the chemical sales offices, he said. Headquarters sales offices for chemicals will continue to be at Niagara Falls and for plastics, at North Tonawanda, N. Y.

Pennsalt Appoints Ogden

Robert P. Ogden, formerly manager of the Pennsylvania Salt Manufacturing Co. plant at Riverview, Mich., has been appointed general manager of the Industrial Quimica Pennsalt S.A. de C. V., a new subsidiary of Pennsalt International Corporation in Mexico.

In announcing the appointment, Richard L. Davies, president of P.I.C., stated that Industrial Quimica has begun construction of a new plant near Mexico City for the production of chlorine, caustic soda, muriatic acid, hydrogen and DDT.

Why you should use 'ROCHE' { RIBOFLAVIN (vitamin B_2) / RIBOFLAVIN-5'-PHOSPHATE SODIUM

'ROCHE' VITAMIN B_2

With the varied requirements for vitamin products in mind, Roche has developed three types of riboflavin to meet your formulating needs. As with all Roche vitamins, there are good reasons why you should specify riboflavin *'Roche'*. These again prove the wisdom of our statement: "It pays to stay with the leader."

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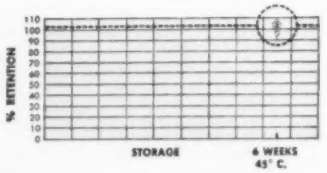

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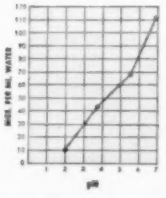

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D. STEADY SUPPLY. Roche makes vitamins, including riboflavin, by tons. You are sure of steady supplies.

E. QUICK DELIVERY. Every order receives prompt, careful service f convenient points. Transportation at lowest rate allowed and p paid to destination. Special routings at cost.

F. PACKAGING. Packed in polyethylene bags in ½ and 1 kilo tamp pruf metal containers and in fibre drums up to 20 kilos. Small qu tities in amber s.c. glass bottles.

G. LEADERSHIP. Because of its position as a world-leader in resea and production of vitamins you can rely on Roche.

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DAVID A. KRESSIN

DR. JOSEPH W. WHALEN

P-M Bacteriology Dept. Head

Dr. Joseph W. Whalen has been named to head the bacteriology department of Pitman-Moore Company. Before joining the company a year ago, he engaged in research for the National Tuberculosis Association in Philadelphia and spent one year as laboratory director of the Arthur S. Kimball Sanatorium in Battle Creek, where he directed and engaged in tuberculosis and other pathogenic bacteriology.

Castlejohn Joins Baxter

Nicholas E. Castlejohn, 29-year veteran in the export field, has been appointed director of international operations for Baxter Laboratories and its Travenol Laboratories Division.

A consultant on international trade and investment, Mr. Castlejohn formerly was associated with Chas. Pfizer & Co. and Abbott Laboratories. He has managed pharmaceutical operations in Europe, the Middle East, Africa and South Asia.

Upjohn Cincinnati Branch

The Upjohn Company has opened a branch in Cincinnati. The branch, serving parts of Ohio, Indiana, Kentucky, Virginia and West Virginia, has both warehouse and office facilities.

Eastman Office in The Hague

Because of the growth of its European market, Eastman Chemical Products, Inc. has established its own sales headquarters in The Hague. David A. Kressin, who has been in charge of the Cincinnati office of Eastman since it opened early in 1954, will head up the new continental office and will establish residence there with his family. He will supervise Eastman sales of chemical raw materials in all European countries outside the Soviet sphere, principally working with the company's foreign distributor organizations.

Ralph R. Shelly, sales representative in the New York office for the past eight years, will replace Mr. Kressin in the Cincinnati post. Frank W. Abernathy, sales correspondent in the New York office, has been assigned as sales representative, replacing Mr. Shelly.

Grove Northeast Sales Mgr.

Burke Robinson has been appointed Northeast Division sales manager of Grove Laboratories and will be headquartered in New York, according to an announcement by Gene K. Foss, marketing vice-president.

Penick Staff Chemist

Stuart Soyster has joined S. B. Penick & Company and its subsidiary, the New York Quinine and Chemical Works, Inc., as a staff chemist at the Newark plant.

Visitor from Down Under

On his world-tour study of cosmetic trends, J. C. Gwynne Ellis, managing director of Cyclax of New Zealand, independent subsidiary of the English firm, recently spent two weeks in the United States.

To meet demands of an increasing volume of business, Mr. Ellis said, his firm has built and occupied a new factory. Primary purpose of his visit to the United States was to interest noncompeting lines to Cyclax in taking advantage of his firm's expanded facilities by entering the New Zealand market, with Cyclax manufacturing and representing in sales.

Kenneth R. Brown Retires

Kenneth R. Brown, vice-president and director of Atlas Powder Company, retired August 31 after 38 years service. His pioneering work in developing the commercial production of sorbitol won him the 1955 honor awards of both the American Chemical Society's Division of Carbohydrate Chemistry and the Commercial Chemical Development Association.

Appointed by Nysco

R. M. Lichtenberg has been appointed to the executive staff of Nysco Laboratories, according to an announcement. Experienced in Latin American and Far Eastern markets, he will service export accounts and have purchasing responsibilities.

The refitted microanalytical laboratory of L. Givaudan & Cie. The new, air-conditioned laboratory is fitted with several of the latest semiautomatic sets for elemental analysis after the R. Levy process. Functional microanalysis will permit analysis of essential oils with a sample of but a few centigrams. The latest means of analytical distillation, of liquid or vapor chromatography, will soon be supplemented by isotopes or radioactive tracers.

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Aerosol perfumes and colognes

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Eight Promoted by Abbott

Eight promotions within the sale organization of Abbott Laboratories have been announced by Herbert S. Wilkinson, vice-president and director of sales. E. E. Sweebe has been promoted to assistant director of sales while retaining his present position as manager of the Hospital Division with headquarters at the company's home office in North Chicago. Werner W. Schulze, Sales Research Division manager, also has been promoted to assistant director of sales.

Thomas E. Braden has been promoted to Western field sales manager, holding the rank of assistant director of sales. New Eastern field sales manager with rank of assistant director of sales is Hugh C. Harris. Mr. Braden and Mr. Harris will have their headquarters at North Chicago.

Joseph S. Rowe has been promoted to manager of the Drug Trade Division at North Chicago and Eulous G. Moss to Southwestern Division sales manager and manager of the Kansas City branch, his headquarters. New district sales manager with headquarters in Birmingham is W. P. Hunt. Promoted to district sales manager with headquarters in Louisville is J. V. Curtis.

Pfizer Assignments

Edward W. Marlier, formerly sales representative in the Pittsburgh and Cleveland areas for the Chemical Sales Division of Chas. Pfizer & Co., Inc., has been assigned to the headquarters staff of the industrial chemicals department in Brooklyn. Carl W. Lorentzen, who joined Pfizer in 1953 as a chemical sales representative, has been assigned to Mr. Marlier's former position.

Walter Gropler has been assigned to the metropolitan New York area and Simon Sluis to the Pacific Northwest area.

Luis de Hoyos, second from right, vice-president and treasurer of Synfleur Scientific Laboratories, Inc., and a member of the Latin American panel at the Conference on American Foreign Policy held recently at Colgate University, Hamilton, N. Y., listens to a comment by Joseph M. Marrone, at extreme left of table, director of the Foreign Trade Zones Board, Department of Commerce. Representing business on the panel, Mr. de Hoyos travels extensively in Latin America, where he has numerous business affiliations. Members of the panel are, left to right, Mr. Marrone; Paul C. Daniels, former U. S. ambassador to Ecuador and Honduras; Dr. Arthur P. Whitaker, Professor of Latin American History, University of Pennsylvania, chairman; Mr. de Hoyos; and Milton Bracker, Latin American specialist, The New York Times.

Assigned by Emery

Robert H. Dhonau and Arthur B. McDermott have been added to the staff of the development and service department of Emery Industries, Inc., according to W. T. Meinert, director of the department, who said that the two will be concerned with the development of all new Emery products as well as technical service for both the fatty acid and organic chemicals sales departments.

Mr. McDermott formerly handled the sale of Emery's industrial chemicals, first in the Chicago area and then in the Southwestern States. Mr. Dhonau has been a member of the applications research group of Emery's research laboratories.

Hole-in-One for Webster

Fred Webster of Van Ameringen-Haebler, Inc. made a hole-in-one during his vacation at the Ekwanok Country Club in Manchester, Vt.

P-M Pathology Research Lab.

Pitman-Moore Company has announced that its pathology research laboratory is in a recently completed building fifteen miles northwest of Indianapolis. In addition to its own pathological research program, the laboratory assists the research staffs at both the Indianapolis pharmaceutical plant and the Zionsville biological laboratories.

The pathology laboratory conducts the "final container" safety testing of Salk polio vaccine, through examination of the brains and spinal cords of monkeys inoculated with the finished vaccine, to assure the absence of live polio virus.

Lentheric Appointments

Ollie Whiteman has been appointed territory manager of northern New York for Lentheric Division, and Joe Keating has joined Lentheric at the sales management level for special assignments, according to an announcement by Ray Meffen, general sales manager of the division.

Felton Midwest Reps

A. Stanley Maas, veteran of twenty-two years service with Felton Chemical Company, Inc., has been transferred to the firm's Midwest headquarters in Chicago, from where he will cover western Michigan, Indiana, and Illinois, according to an announcement by A. Dingfelder, sales manager.

Noah M. Showe has been appointed to the field staff, will make his headquarters in Detroit and service eastern Michigan, Ohio, and West Virginia.

A. STANLEY MAAS

NOAH M. SHOWE

● *And uniform savings for you!* For any variation in the beeswax base of your chemical, pharmaceutical or cosmetic preparations can cause additional expense in your laboratory and plant—and lost sales at your dealers' counters.

Natural refined beeswax is a small fraction of your total product cost. Yet the unchanging purity, texture and whiteness of Beehive Brand Beeswax can be the big help in keeping your product up to the high standards you have set.

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Victor Robert Visits Verley

Victor Robert, general manager of Albert Verley & Company's wholly owned affiliate, Aromescence, Inc., Paris, recently visited the United States to observe Verley's new techniques and equipment for compounding. Since he had not visited New York since April, 1953, it was his first opportunity to inspect Verley's new offices and plant at Linden, N. J. He also was conducted on a special inspection tour of the newly established essential oil department and a tour of Verley Chemical Company in Newark.

Mr. Robert's trip to the United States grew out of the recent visit to France by Edouard Baumann, Verley sales representative, who went there to stimulate sales for Verley products in France. Mr. Robert, who accompanied Mr. Baumann during calls on various perfume houses, decided to pay a return visit to Verley.

Mead Johnson Exec. V.P.

Albert R. Wayne, 47-year-old financial executive, has been appointed vice-president for finance of Mead Johnson & Company, according to D. Mead Johnson, president.

Geigy in New Hdqrs.

Geigy Chemical Corporation has announced moving its headquarters from New York City to Saw Mill River Road, Ardsley, N. Y.

Emery Assignments

Robert F. Connelly has been assigned as West Coast field salesman for the organic chemical sales department of Emery Industries, Inc., according to R. F. Brown, organic chemical sales manager.

Robert J. Sturwold and E. B. Cook Jr. are recent additions to the research staff of Emery, according to Dr. R. G. Kadesch, director of research.

ROBERT F. CONNELLY

Becton, Dickinson Appoints

Thomas W. Starling has been appointed manager of the Laboratories Division of Becton, Dickinson and Company. In his new position he heads the laboratory sales activities of the parent company and its subsidiary, Baltimore Biological Laboratory.

Richard N. Shaw, formerly director of sales, Drug-Pharmaceutical Division, has assumed the duties of manager of marketing. In this newly created position, he will handle coordination of market research, distribution, sales planning, and merchandising for new products and new product lines.

Arthur C. Ball has become manager of general line sales and will supervise sales activities in the wholesale, retail and chain store fields.

Back from European Tours

Jacques d'Aigremont, president of Roure-Dupont, Inc., on his recent return from a visit of more than two months abroad brought with him samples of rose de mai, jasmin, lavender, and other naturals. He expressed enthusiasm for developments of basodors and specialties by technicians of the Argenteuil laboratories.

Norman Applezweig of Norman Applezweig Associates, consulting biochemists, has returned from a two-month trip to Europe during which he visited clients in Italy, Switzerland, Spain, and France, and attended the International physiologic Congress in Brussels.

Cutter Buys Corn King

Cutter Laboratories has purchased the assets and business of Corn King Co., manufacturer of medicinal, nutritional and allied products for livestock and poultry, according to a joint announcement by Robert K. Cutter, M.D., president of Cutter, and Arthur Barlow, president of Corn King.

Korean Chemist Joins CSC

Yoonsik Lee of Taegue, Korea, has joined the Commercial Solvents Corporation's Terre Haute, Ind., research center, according to Maynard C. Wheeler, vice-president.

Move Ungerer Chicago Office

Ungerer & Company, Inc., having expanded its Chicago office and warehouse facilities to accommodate increased business, has relocated these at the new address: 1415 Howard Street.

R. M. BOUDEMAN

Boudeman in New Post

The appointment of R. M. Boudeman as assistant general manager of The Upjohn Company's International Division has been announced by Robert S. Jordan, general manager of the division.

Martin Adelmann

Martin Adelmann, associated with Schimmel & Co. for more than twenty years, died recently while on a visit to Germany. He is survived by his wife, Mrs. Katharina Adelmann, a chemist for many years at Schimmel.

James J. Kerrigan

James J. Kerrigan, chairman of the executive committee of the board of directors of Merck & Co., died September 5 after a long illness. He was 62.

Elected president of Merck in 1950, Mr. Kerrigan had started with the firm in 1907 as a messenger boy. Last year, he resigned as president. When he joined the company in 1907, Merck had but 300 employees and sales of $2,330,046. He played a leading role in the growth of the firm, which, at the time of his resignation as president, numbered 10,000 employees and had sales of $157,900,000.

He received a Doctor of Laws from the National University of Ireland, country of his birth, in 1951, and the following year he received a Horatio Alger Award.

Surviving are his wife, the former Miss Doris Louise McGackin; three sons; two daughters; a brother; and nine grandchildren.

Arthur E. Laverty

Arthur E. Laverty, executive secretary of the Canadian Toilet Goods Manufacturers' Association and formerly secretary of the Proprietary Association of Canada, died recently at the age of 52.

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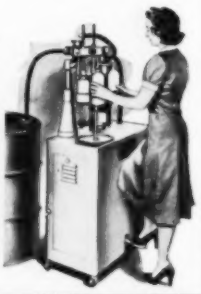

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TORONTO • VANCOUVER • WINNIPEG • TOLEDO (export)

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Eliminating Dead Items

It's the devil's own job to persuade marketing people to eliminate the deadwood which encumbers their lines. Most marketing people are *volume* and not profit minded. Many dead items show an apparent gross profit because of the ridiculous way we cost our finished stock inventories. We arrive at a cost of sale (materials, labor and factory overhead) when the item is made and it remains at that cost until finally it is sold. This is obviously deceptive. If we had to ship all finished stock to outside warehouses, service charges would accumulate month by month, and the longer the item remained in stock the greater would be its basic cost. When we keep such items in our own warehouses no account is taken of time and space charges.

Space-time charges should include general marketing expense, administration expense—which includes among many other things interest paid in one form or other for money invested in inventories—warehouse charges and shipping expenses.

I am not proposing that inventories be repriced every month. I am proposing a statistical method of applying all general charges to inventories on an annual basis for management purposes. By "general charges" I mean the total expense of a business apart from charges that can be made directly to specific items.

I propose that all general expenses be applied to individual products on a space-time basis.

To establish the method requires determining the cubic space content of each sales unit whether it is an individual bottle or a case of a dozen. Listing the total annual production and extending it by the cubic space content of each item will give the total number of cubic inches produced.

The total number of cubic inches produced, divided into the total of all administrative, marketing and shipping expenses will give the annual cost per cubic inch of all such expenses. Divide by twelve to get the average monthly cost per cubic inch. This can then be applied to specific items according to their cubic space content on a monthly basis.

If an item remains in stock an average of two months its monthly space-time cost would be multiplied by two. If it remained in stock an average of six months its monthly charge would be multiplied by six.

Management is concerned with time and space and turnover insofar as inventories are concerned and this method of costing provides a yardstick by which general costs may be applied to specific products on a space-time basis.

When slow moving items are truly costed by this method, the apparent gross profit shown by the conventional method of calculating only the prime cost elements soon disappears. Marketing people will offer all sorts of ridiculous reasons for keeping certain items in the line but when you can prove to them that such items are really being sold at a loss you can get them dropped.

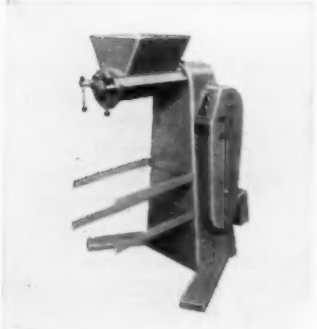
Foreign Plants

Recently in Mexico City I visited two new American plants built by two of the largest pharmaceutical firms in this country. Both are flashy architectural jobs in keeping with the Mexican spirit but neither is in any sense a factory in spite of their considerable size. The architects were given a free hand. The result is that each plant consists of a congeries of separated buildings in the design of which, not the slightest thought has been given to material flow, convenience, expansion or economy of operation and maintenance. All the separate, individual elements that comprise a factory have been mixed up in a mish-mash of wasted space, so that none can be expanded without intrusion upon another. The best that can be said is that

(Continued on page 375)

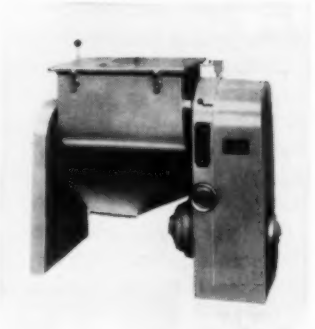
Operator Ralph Buis, Jr., filling hopper with tablet granulation for Stokes Model 540 Rotary Tabletting Machine at plant of Eli Lilly & Co., Indianapolis, Indiana.

Stokes Auxiliary Equipment for Pharmaceutical Manufacturers



Granulators employ the efficient oscillating principle for breaking up moistened or dried aggregates. In a range of capacities.

Drying Cabinets use recirculating air; steam or electric heating under automatic control. Models with 5, 16 and 24 trays.



Granulating Mixers, for blending wet or dry materials, feature dust-tight lid, safety shut-off, controlled tilt for unloading.

Coating Pans. Model 1-D stand uses 16" to 60" stainless or copper pans, or polishing pans with removable canvas drums.

(Continued from page 371)

they are attractive, especially from the outside, but from a layout point of view they are appalling.

Dome Roofs

While working on the plans for the third factory I have designed in the past ten years for the Colliere interests, I made a study of reinforced concrete dome roofs and as a result became very much sold on them. Until now I had believed, erroneously, that a dome roof could not be made strong enough to sustain a heavy snow load unless it was made very thick and was supported upon very narrow column spans. The fact is that a light weight concrete shell, suitably reinforced, resting upon columns sixty by fifteen feet apart, and made only two and one half inches thick, will sustain seventy five pounds per square foot. The maximum code requirement I have heard of in this country is fifty five pounds per square foot. When finished, the shell is covered with the conventional tar, gravel and felt roofing combination.

The reasons why I am so sold on this type of roof are: such a roof is much less than half the cost of the conventional steel truss roof; no internal cross members, tie-rods or sway bracing are required—hence the ceiling formed by such a roof is free from dust collecting elements—and by treating the ceiling with a wash coat of cement plaster after the forms have been removed, you can have a ceiling as smooth as a conventional plaster job. The column spans made possible by such a roof are enormous, I have seen column spans of 130 feet and I understand that the new St. Louis airport has a hangar with a span of 240 feet. The dome built by Sarienen (I hope the spelling is correct) at MIT is self supporting and rests, so I am told, only upon three points. I don't know the diameter of this but since it covers the auditorium it must be pretty large. In the conventional dome or convolute roof, the supporting columns are spaced from fifteen to twenty feet apart. The columns also are made of reinforced concrete and are designed as an integral part of the dome. The spacing of the columns depends upon the width of the span.

If you like roof lighting you can have glass elements inserted at intervals and these will not crack as they do in conventional saw-tooth and monitor roofs, because a convolute or dome roof has a considerably larger modulus of flexibility than the stated types of roof. Likewise wiring conduit can be laid in the cement slab when it is cast, thus permitting flush mounting of lighting fixtures.

There is a trick to building such a roof and no inexperienced architect or contractor should be allowed to build one until he knows what he is about. The cement used must be the best quality 2000 pound psi compression strength. It must be combined in proper porportions with vermiculite, sharp clean sand and crushed stone aggregate. Great care must be exercised in mixing; the water proportion must be just right, and not less care must be exercised in pouring the cement and spreading it in the forms. Likewise the size and particularly the *arrangement* of reinforcing rods must be carefully determined.

If you are building in an area governed by local building codes, you probably will have a hell of a time getting an exception because American building codes are notoriously inflexible. You may have to build a section and have it load tested to satisfy local authorities. But the economy, simplicity, cleanliness and looks of such a roof are well worth the effort.

Last but by no means least, a concrete roof of the type described is, when supported by concrete columns, fireproof. In Mexico City there was a gasoline fire in an airplane hangar built as described and it burned itself out without affecting the structure at all. Had the roof been built in the conventional manner with steel trusses, it would have collapsed.

Diagnosis Inc.

A few months ago, when I announced my diagnosis machine, most or all of you thought I was spoofing. But I wasn't. For the benefit of the Doubting Thomases among you, I should like to announce that the Monroe Calculating Machine Company has beaten me to the market. This company—I suspect spies somewhere—has stolen a march on me. They have developed for the Air Research & Development Command, an electronic machine called the "MAID." This means Monorobot Automatic Internal Diagnosis. At the moment this machine is being used to check on digital computers to make sure that none of the vacuum tubes, transistors or germanium diodes, which comprise the nervous systems of such machines, suffer from dropsy, inflammation of the bowels, fever and ague or scrofula. Thus far the Monroe Calculating Machine Company has confined its Maid to fussing around with innards of machines. But when they attempt to invade the claim staked out by Diagnosis Inc., I will add another gadget to my machine and they will find they have a MAID no longer.

Cricket

This is a sort of ball game played by the English. The equipment used consists of a ball about half the size of a basket ball and a bat as wide as a canoe paddle and twice as heavy. There are eleven men to a side. The purpose in having eleven men to a side is to allow six from each side to go to the local pub to drink the health of Old England while the other five are playing.

The five active players consist of a pitcher, a catcher and three fielders. The three fielders are not really needed because the man at bat doesn't have to run bases as in baseball. All he has to do is hit the ball and it counts as a run. And how the hell could he

miss?—unless of course the pitcher takes unfair advantage of him and throws the ball while he is tying his shoe lace or imbibing a pint of bitter.

The rule of the game is: "Once at bat, always at bat." That's why cricket scores require as many digits to record as the national debt.

About four months ago, Aspro sent a team over from England to beat the Dutch in Holland. The game is still going on. The last I heard the score was 10,000 in favor of Aspro and the Dutch had not yet been at bat. No one will hazard a guess as to when the game will end.

It is because of this uncertainty as to the duration of a cricket game, that Aspro will not allow anyone over forty to play. This is not for the reason that the game is so strenuous, but it is simply because too many of the players would be eligible for pensions when finally the games come to an end.

Super Duper Man

From now on you ordinary mortals may consider yourselves small potatoes compared with me. I arrived at this exalted station through listening to my grandson, aged five, debating with a playmate, aged six, who was loaded down with a Davy Crockett hat in spite of the heat, and a pair of shooting irons, the weight of which had almost pulled his pants off.

The young adventurers were debating the merits of Hopalong Cassidy, Buck Rogers, Davy Crockett and Superman. Everytime my grandson mentioned an exploit of one or the other of these celebrated characters, his companion raised the ante. If my grandson said that Davy Crockett killed a bear, his companion countered with the information that Buck Rogers killed an elephant. Finally this assertive young man stated that Superman could jump over the moon.

For a moment my grandson was obviously at a loss for an exploit that would cap that one. Then he said, "My Mepa can take his teeth out."

That silenced the other young lad. He looked deeply impressed. He could think of no exploit that would match that one. Then the young men came into the office to see me. "Take your teeth out Mepa. Do it Mepa!" my grandson said. So I did it to the complete mystification of my grandson's playmate. I warned him not to go near the teeth as they would bite his hand off. He looked solemn. He'd seen everything.

Let Davy Crockett kill bears and Buck Rogers elephants; let superman soar over the moon and be damned to them! Mepa can take his teeth out!

Admiral Fish

In view of the fact that Fritz Degener is permanent fish chairman of the various associations, it was decided to confer a title upon him. We thought of several. Some people on the committee suggested "Fish Face." But that was voted down because Fritz doesn't really look like a fish. Not much anyway. Then "Fish Fritz" was suggested but it, too, was voted down because it suggested "fried fish" and, if this rank and title were adopted, it would only be a matter of time before some tongue-tied people would be calling him "Fried Fritz." (There was a famous ship captain named Fried. Remember the fellow who wouldn't give up his ship a few years back?) I wouldn't trust myself on a sinking ship with Fritz, fried or not. So finally we decided to call him Admiral Fish.

I wonder if you know how Fritz acquired his magnificent command of English? It seems that when Fritz first came to this country he had a pronounced cockney accent, inherited from his Hessian forebears, who were hired years ago by the British to come over here and shoot my ancestors—among others. So Fritz decided that the only way to lose his accent was to get a job as a waiter. He didn't know then, that American waiters come from Turkey, Poland, Spain, Puerto Rico, Italy, Germany and Hungary, with a few Swedes thrown in as bus boys. So Fritz got a job in a Chicago hotel. Because of his good looks—he didn't look like a fish then—his good manners, his superb tact, which was always manifested when he got the orders mixed up as he usually did, and finally, his excellent command of the wrong kind of English.

It so happens that shortly thereafter, the late Queen Marie of Roumania visited Chicago and was domiciled in Fritz's hotel. Because of his obvious qualifications Fritz was appointed her valet-de-chambre. I don't know all the duties of a valet-de-chambre but among his duties, I understand, Fritz had to help the queen put on and take off her peig noir, whatever that is. It seems this flimsy garment was covered with pearl buttons, which aroused in Fritz an atavistic desire, because all Cockneys like pearl buttons. But Fritz resisted the urge to pinch a few as souvenirs, but, when he described these buttons longingly to his colleagues in the hotel, they importuned him to steal a few and offered Fritz a dollar a piece for them. But Fritz resisted temptation. But, as he now tells his salesmen, "No matter what the customer wants, give it to him," he decided to supply the demand. So he went down to Woolworth's and bought out the "entire" stock of pearl buttons. I think they cost then about a dime a dozen. And he gave the customers what they wanted at a dollar each. When the Queen left Fritz wept. He still likes pearl buttons because pearls come out of fish.

"The Blessings of Liberty"

"National rivalry now is like sailors fighting each other while the ship labors against a gale. There is no simple solution. * * * The real enemies of mankind are not in some special region of earth but in the

conditions all men face—famine, disease, ignorance, injustice, greed, cruelty, abuse of power and mental unbalance. The dark places of the mind are nearer than we think. * * * There is the terrifying danger that political and social organization and human understanding cannot develop fast enough to cope with the advance of science and invention. To preserve the integrity and dignity of the individual human being through ever-increasing complexities is a baffling task. Yet it is our task."

—Zachariah Chaffee, Jr.

Pressure-Sensitive Labels Dispenser

Production of a new automatic dispenser for pressure sensitive labels has been announced by Archer Label Company, 783 Kohler St., Los Angeles 21. The dispenser, Multimatic Model 5, reportedly speeds up label application as much as 400 per cent over manual methods.

The new model has a heavier motor and overall construction has been simplified to permit the use of fewer parts. The trip mechanism has been made sturdier and more simple. Loading has been made easier and quicker. The heating unit is larger to take care of the increased width of the machine.

The Multimatic will dispense multiple rows. A multiple width roll as wide as 5¾" will contain from one thousand to ten thousand labels. From two to eight or ten labels can be dispensed at once, depending on the size of labels.

Once turned on, the machine dispenses a single row of labels and stops. When the last exposed label is removed, the machine turns itself on, dispenses another row and stops again.

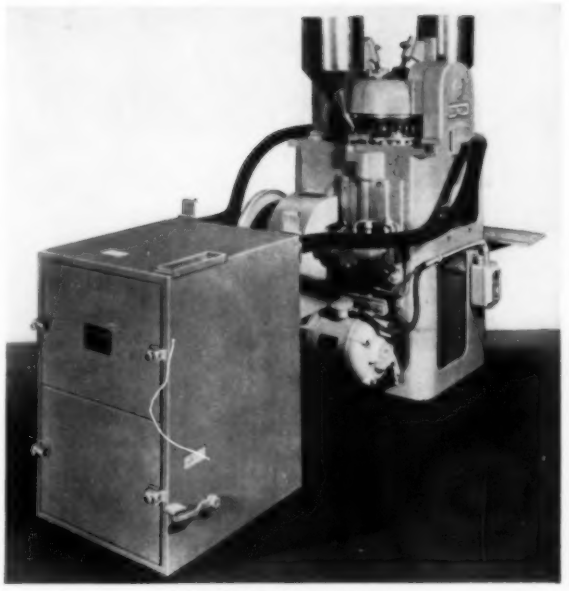
The new dispensers may be bought or rented. The unit measures 9¼" wide x 12" long x 6½" high and weighs 9¾ lbs.

New Colton Dust Collector

A new Model 66 Colton dust collector designed to cut maintenance costs and increase operating efficiency of rotary tablet presses by keeping working parts clean and free of dust is now available from Arthur Colton Company, 3400 East Lafayette Ave., Detroit 7. The dust collector is a self-contained, portable unit that can be attached through 2-in. dia. flexible hoses to especially designed, efficient dust nozzles on all Colton rotary tablet presses. One dust collector can serve two rotary presses if desired.

The dust collector units have been developed to provide increased efficiency and lower capital expenditure compared to those usually experienced with central dust collection systems. They can be moved from machine to machine according to the plant requirements.

Colton Model 66 dust collectors are a cloth filter cabinet type. Dust-laden air is drawn down through a compartment behind the ½-hp motor in the cabinet



Colton Model 66 Dust Collector

and up through a set of twenty-four, 18 x 10-in. filters providing 60 sq. ft. of area. Heavy particles fall into an 18¾ x 22¾ x 1¾-in. deep tray beneath the filters. Finer dust is drawn to the filters and adheres to their outside surfaces. Filtered air passes through the motor chamber above the filters, thus cooling the motor; and then is exhausted through a vent on top of the cabinet back into the room.

Motor, fan and housing are mounted in steel cabinets in conjunction with a set of chemically-treated, spark-resistant filters to provide an efficient method of filtering within a minimum space. A foot pedal control outside the filter unit can be periodically operated to shake the filters and remove the dust adhering to them. Thorough cleaning of the filters is accomplished by cleaning at regular intervals, with a brush provided with the unit.

The two inlets handle 370 cfm of air. The cabinet is 22-in. wide, 24-in. deep and 33-in. high. The compleet unit weighs 270 pounds.

Automatic Suspended Centrifuge

A completely automatic suspended centrifuge for the chemical, pharmaceutical, and food processing industries, which comes in sizes ranging from 20 to 48 inches, has been developed and is now in production at The Fletcher Works. Operation can be either by hydraulic or electric drive motor.

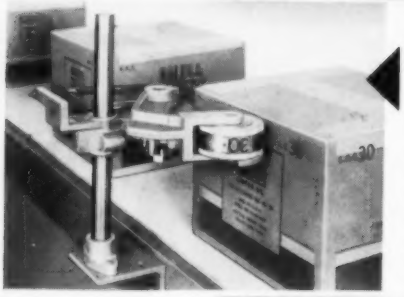
Edward T. Taws, president of Fletcher, says it is the first fully-automatic equipment of its kind that can operate at a uniform speed, produce a uniform product with each cycle yielding identical quality and quantity yet eliminating the human error in any such operation. Fully automatic operation will permit one operator to direct the activity of any entire bank of fully-automatic centrifugals, according to Mr. Taws.

Coding Problem?

Check with Gottscho

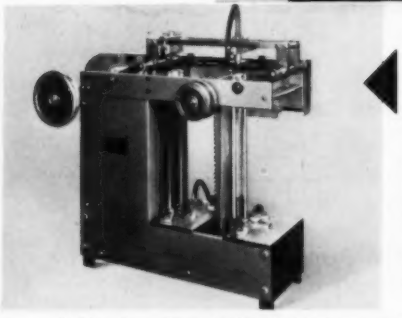
. . . automatic code-dating machines for every package, every purpose

Top-Coder . . . imprints code-dates, other changeable legends on top surface of round or rectangular cans, canisters, jar covers, cartons, boxes. Attaches to conveyor or packaging machine. Locates imprints accurately even if container flow is irregular or intermittent.



Side-Coder . . . imprints side surfaces of folding cartons, set-up boxes, rectangular cans and canisters. Can be used to imprint codes, product identification, etc. simultaneously. Fully automatic, adapts to any mechanized production-line.

Bottom-Coder . . . portable, space-saving unit that imprints codes on bottom of jars, bottles, cans, etc. Imprint surface may be flat or concave, flush or recessed. Wheels right up to the line, can be moved about at will.



Label-Coder . . . foolproof, automatic bench unit that imprints codes on labels in bulk. Imprints up to 5 different legends on labels in a single run. Handles full hour's capacity of labels without attention . . . delivers them in perfect stack.

Write for descriptive bulletin, specifying machine in which you are interested

Gottscho **ADOLPH GOTTSCHO, INC.**

Dept. C, Hillside 5, N. J.

Automatic Production-Line CODING, MARKING, IMPRINTING MACHINES
In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

Prior to this, operators timed cycles purely by guesswork, the brake was hand-released, machine started by hand, and feeding and washing was accomplished by manual valves. Final drying period then was initiated by hand. Machine was hand braked to unloading speed, and operator then manually unloaded. All times were at the judgment of operator.

The machine starts by a push of the master button. At a predetermined time, the feed valve automatically opens and begins to feed the slurry. The feed can be controlled by timing or automatic cake thickness detector to control the amount of cake desired. The detector is optional as required.

The machine also can be set to spray the cake with an indefinite number of washes, in accordance with the operation, Mr. Taws says. The centrifugal then accelerates to high speed. At the completion of this pre-set period the machine automatically brakes to unloading speed, and this speed is maintained by the Fletcher "Centroid" switch. If need be, an automatic valve lifter is engaged, removing basket valve and permitting unloading through the basket bottom opening.

After automatic unloading of the basket, the valve plate is automatically replaced. The centrifugal immediately begins the next cycle.

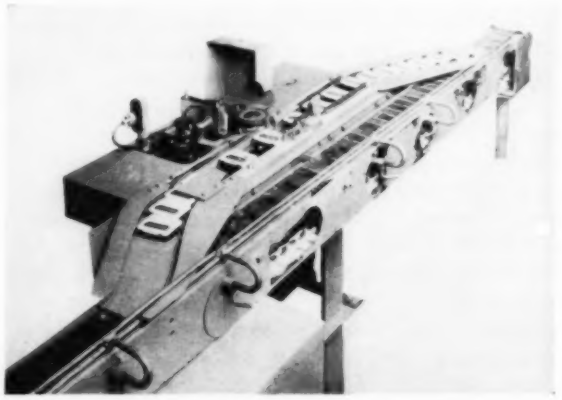
Cycles can run through as low as 150 seconds, or even as long as 32 hours (for penicillin).

Extra features of the fully-automatic Fletcher centrifugal include an unbalance load knockoff in the event of severely unbalanced load, thus bringing the machine to a stop automatically to prevent damage.

In case a cycle is interrupted, Mr. Taws explains, the operator can finish the batch or cycle by push-button operation for each step. He says that the new automatic machine must complete one cycle before another is started, thus providing proof against double feed, double spray or double unload.

Coder Paces Conveyor Line

A new automatic coder designed to imprint small metal or cardboard containers and boxes is installed at the Philadelphia plant of the Merck, Sharp and



Dohme Division of Merck & Co. on their Sucret production line. The machine removes the boxes from the conveyor line, positions them under the printing head, prints, and returns them to their proper position on the conveyor without scratching or marring surfaces. The unit ties in with the conveyor control system, so that imprinting is always coordinated with conveyor line and wrapping machine speeds. Imprinting automatically stops when system is shut down. Rates are up to 150 boxes per minute.

The Coder was developed by Industrial Marking Equipment Co., Inc., Brooklin 17.

Imprinting Attachment

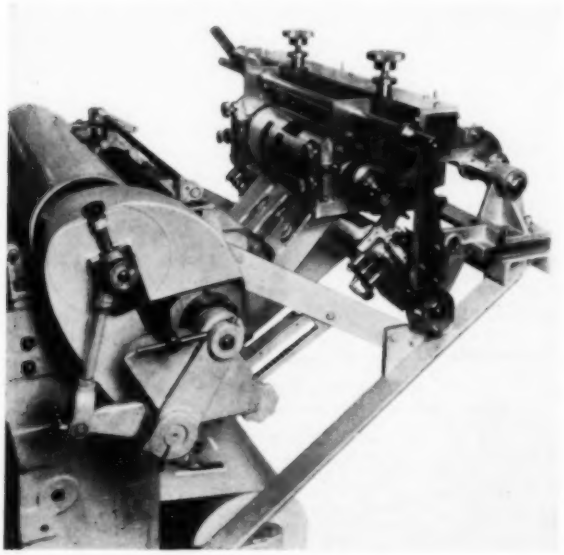
A compact imprinting attachment for simple installation on any standard wrapping or bundling machine, has been announced by Adolph Gottscho, Inc., Hillside 5, N. J.

Designed for imprinting any changeable legend on the wrapper as an integral part of the packaging operation, the attachment is being used for applying code-dates, flavors, colors and other supplementary copy on wraps of cellophane, other films and paper.

The Gottscho imprinter incorporates a flexographic printing system that uses fast-drying liquid inks of any color. Units are available that provide for either random imprints or accurate registration of imprints in any desired location on the package. Operation of the unit is completely automatic and c n be synchronized with the parent machine at any standard production speed.

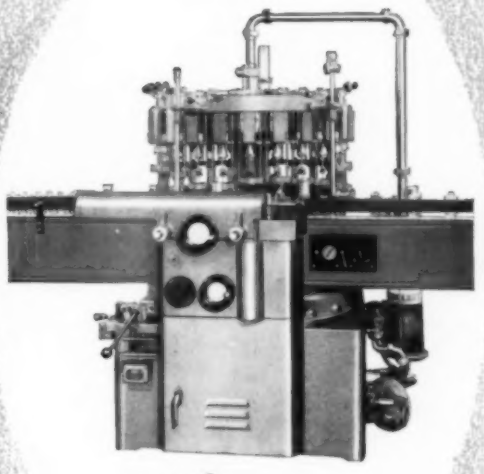
Available in various sizes to produce imprints up to 21″ wide, the Gottscho imprinting attachment can be readily changed for different cut-off or repeat lengths. Also, copy changes can be effected in just a few minutes time.

Gottscho Printing Attachment



INDUSTRY LEADERS

pin their faith to this



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Exciting benefits all the way, making savings so substantial that in a short time, the machine pays for itself.

Efficiency such as gives a new meaning to the word!
Performance in operation that's astonishing!
Economy is amazing—mows down production costs!

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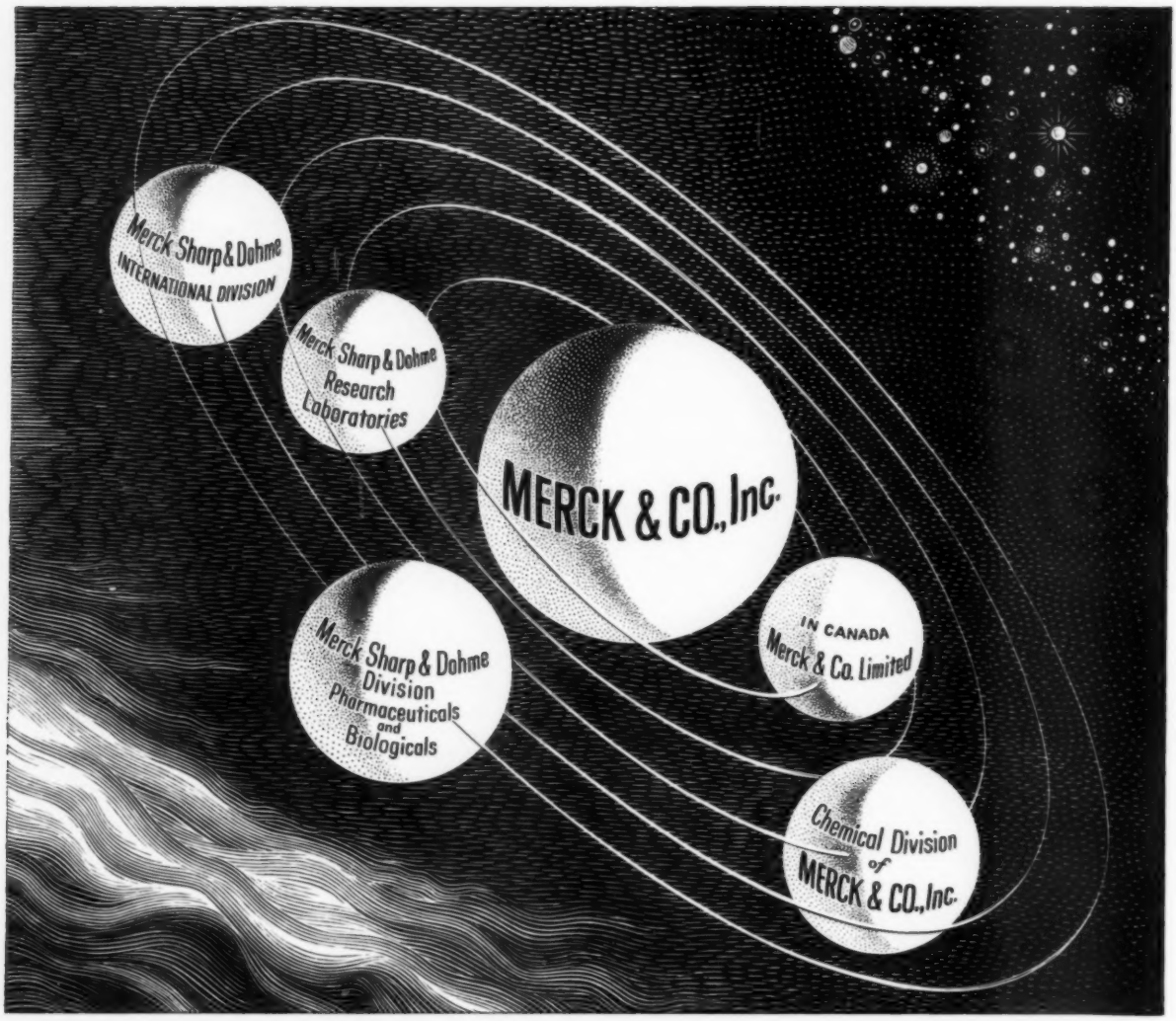

The world of Merck medicinal and industrial chemicals

To serve our many groups of customers in the professions and industry at home and abroad, Merck & Co., Inc. is now organized into four main divisions, with wholly-owned subsidiaries in Canada and abroad. These divisions and subsidiaries provide a firm foundation for further progress in research and in making the results of this research available to the professions, to industry, and to mankind.

The Chemical Division of Merck & Co., Inc. produces fine and medicinal chemicals, and nutritional products, for more than fifty major classifications of industry. Many of these products are the direct result of the Merck research program and have given manufacturers in many fields the key to adding new products, improving existing products, or lowering production costs. Plants in Rahway, N. J.; Danville, Pa.; Elkton, Va.; Albany, Ga.; South San Francisco, Calif.

Merck Sharp & Dohme Division (formerly Sharp & Dohme) is the pharmaceutical and biological division of Merck & Co., Inc. This division concentrates on the development, production, and distribution of products for prescription by the physician and dispensing by the pharmacist. Plants in Philadelphia and West Point, Pa.

Merck Sharp & Dohme International Division serves the professions and industry throughout the Free World. Plants in Argentina, Australia, Brazil, Colombia, England, Holland, Mexico, and the Philippines.

Merck Sharp & Dohme Research Laboratories conduct basic research, with emphasis on the discovery and development of chemicals and drugs to serve industry and to safeguard health and combat disease in man, animals, and plants. Laboratories in Rahway, N. J., and West Point, Pa.

Merck & Co. Limited is the subsidiary in Canada for the production and distribution of fine and medicinal chemicals and pharmaceuticals. Plants in Montreal and Valleyfield, Que.

At left is the well-known symbol of the Chemical Division of MERCK & CO., Inc. At right is the new symbol of Merck Sharp & Dohme, the pharmaceutical and biological division of MERCK & CO., Inc. The new trademark is also the symbol of the Merck Sharp & Dohme International Division of MERCK & CO., Inc.

Compounder's Corner

Heat-Stable Emulsions

The stability of oil-in-water emulsions has become almost a routine certainty in usual cosmetic formulation and pharmaceutical emulsions have become increasingly stable and elegant. In the field of pharmaceutical and medicinal emulsions, however, certain special stability problems may be encountered, as in preparations for injection. These must be sterile, and the simplest and most generally trustworthy method of attaining sterility is by heat treatment. Sterilization is accomplished by autoclaving at 121° C. for 10 to 20 minutes, which imposes a severe strain on the emulsion, yet most of the dispersed oil particles must have a diameter of less than 0.5 microns.

The oil particles in stable emulsions are coated with one or more emulsifying agents containing portions that are oil-soluble and water-soluble and this relative solubility must be maintained at high temperatures for stability of the emulsion under these conditions. In this investigation by R. R. Benerito and W. S. Singleton (*Journ. Amer. Oil Chem. Soc.* 33:364, 1956) the solubility at elevated temperatures of water-soluble or dispersible emulsifying agents of the polyoxyethylene type was studied along with some emulsifiers with hydrophilic groups of a different nature and some with limited or no affinity for water. In all, 33 emulsifying agents were investigated. An emulsifier of the nonionic type is usually less soluble as the temperature rises, the solution becoming turbid. Those emulsifiers which maintain complete solubility at the highest temperatures should form emulsions with the greatest heat-stability.

One per cent solutions or dispersions of the various emulsifiers in water at room temperature were slowly heated until solubility inversion occurred. After inversion the samples were allowed to cool and the temperature of clearing was observed. The inversion temperatures were found to be constant. To determine if inversion temperature was parallel to emulsification power, several emulsions containing 15 per cent of sesame oil and one per cent of the emulsifier were made. The emulsion was considered to be stable to autoclaving if it maintained the particle size which it had before autoclaving; this was determined by examination under a microscope.

With a given type of emulsifier containing polyoxyethylene groups, the temperature at which solubility inversion occurs was found to increase as the weight percentage of polyoxyethylene groups increased. The variation in limit of solubility of the glycol lauryl ester type emulsifiers was from insoluble at room temperature to soluble up to about 92° C. as the weight percentage of polyoxyethylene groups increased from 52 to 91 per cent. The glycol stearyl esters were more soluble than the lauryl esters at elevated temperatures. However a comparison of the types of emulsifiers of approximately the same weight percentage of polyoxyethylene groups shows widely different inversion temperatures. The amine type emulsifier was found to be more soluble than the amide, which in turn was more soluble than the ester type.

In the polyethylene-propylene oxide emulsifier, greatly different in chemical type from the glycols or amines, the limit of solubility was not reached at the boiling point of water at atmospheric pressure. Although its weight percentage of polyoxyethylene groups was exceeded by other materials with lower temperatures of inversion, this material exhibited the longest solubility range of all the emulsifiers tested.

Usually the initial particle size of the emulsion depends on the pressure of homogenization, under otherwise equal conditions. In most cases, the general particle sizes immediately after the homogenization process, during which time a heat exchanger was used, were about the same. However the stabilities of the emulsions at the temperature of the autoclave varied greatly.

Emulsions were made with some emulsifiers whose inversion temperatures were above 85°, which is the usual temperature reached during repeated recycling during homogenization at pressures as high as 3,500 p.s.i. With these emulsifiers the increase in particle size was not as great as with those emulsifiers which inverted under 85°. The polyethylene-propylene oxide was able to withstand the highest temperature reached by the homogenizer (85-90° C.).

The results obtained indicate that the combination of high temperature and extreme mechanical shear caused by homogenization at high pressure causes particle-size growth in emulsions containing only those emulsifiers which exhibit solubility inversion at temperatures lower than about 85°. It is apparent that the weight percentage of polyoxyethylene groups must reach a certain optimum for a given alkyl group for a given emulsifier. In general, emulsifiers require approximately 70 per cent by weight of polyoxyethylene groups in order to withstand homogenization and sterilization in emulsions of the type investigated.

It is evident from the data that a combination of hydrophilic-lipophilic emulsifiers results in a better emulsion than if either emulsifier is used alone. The results indicate that an emulsion can be improved with respect to particle size by the use of two emulsifiers rather than only one. For example, an emulsion containing a polyoxyethylene lauryl alcohol as the only emulsifier showed no separation of phases on autoclaving, but the particle size ranged up to 2 micron in diameter. By the addition of a more lipophilic emulsifier, polyoxyethylene sorbitol triglyceride, the particle size was uniformly about 0.7 micron.

As indicated by the results, if two strongly hydrophilic emulsifiers are used, the resultant emulsion does not

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have good particle size, probably because of the limited number of oil-anchoring alkyl groups.

Hair Bleaching

The bleaching of hair for cosmetic purposes is usually accomplished by means of an alkaline solution of hydrogen peroxide. A peroxide solution yielding 20 volumes of oxygen per volume of solution gives good results although weaker solutions are often used. The alkaline ingredient is generally ammonia and it is added to the peroxide solution just before it is applied to the hair. The ammonia serves two purposes in the bleaching operation. In the first place it promotes the decomposition of the peroxide to yield nascent oxygen which is the actual bleaching agent. It also softens and swells the hair fibers so that the oxygen can reach the pigment in the interior of the fibers.

An effective bleaching preparation is made by combining hydrogen peroxide with an alkaline detergent solution. The detergent promotes penetration of the bleach into the hair fibers. Where a long bleaching treatment is required, the mixture of peroxide and detergent solution may be whipped to a lather. The foam is then piled on the hair and it is not necessary to make repeated applications of peroxide.

Brunette shades of hair go through a series of color changes when treated with an alkaline solution of hydrogen peroxide. Normal black hair first turn brown, then red and next a red-gold. The reddish cast then fades out leaving a golden blond shade. On further action of the bleaching solution the gold changes to a definite yellow and finally to an off-white.

Unfortunately, hydrogen peroxide has a destructive effect on the protein which makes up the hair fibers as well as on the hair pigments. The damage is slight in an acid or neutral solution. However, it may be quite severe when the hair is exposed to an alkaline solution of peroxide for half an hour or more. Damage to the hair can be detected by a decrease in its resistance to stretching. The action of peroxide solutions is particularly harmful if traces of metal salts are present on the hair as the result of previous dye treatments.

A very mild form of peroxide bleach for use on the hair has been developed recently (*Fr. Pat.* 1,098,369). It is not effective for complete decolorization but is useful for lightening hair which has become darker with age. The peroxide solution is preferably less than 10-vol. strength and is made weakly acid by the addition of an organic acid. In order to accelerate the bleaching action, which would otherwise be extremely slow, a quaternary ammonium salt or similar cationic compound is added. The quaternary salt acts as a wetting agent and also softens the hair so that the peroxide solution can penetrate into the fibers.

The familiar quaternary ammonium salts such as cetyl dimethyl benzyl ammonium chloride are suitable for use in the peroxide solution as well as some of the newer quaternary morpholinium alkyl sulfates.

Among the organic acids suggested for use in the bleaching solution are adipic, tartaric and glutamic acids. The concentration of the acid is not more than one per cent. One of the usual peroxide stabilizers, e.g. sodium stannate or sodium pyrophosphate, is added to the bleaching solution which can then be stored in glass bottles without deterioration. The following composition is an example of an acid hair bleach for partially decolorizing the hair. The lotion has a pH value of 4.0 to 4.5.

Hydrogen peroxide, three per cent	**97.1**
Alkyl ethyl morpholinium ethosulfate	**1.5**
Adipic acid	**0.8**
Sodium stannate	**0.6**

—*Schimmel Briefs.*

Hormone Creams

The only hormones now used in cosmetics are the *estrogens*, a product of the female sex glands. There are other compounds with similar effects which can be synthesized in the laboratory.

Beneath the epidermis there is a dense fibrous layer which gives strength and elasticity to the skin. It is made up largely of white fibrous tissue which supports the blood vessels, the glandular structures, the hair follicles and the nerves. This fibrous tissue is disposed in bundles made up of numerous fibres of a substance called collagen. As the skin ages—and as the estrogen level falls in the female—there is some shrinkage of the collagen with loss of elasticity of the skin and hence wrinkles. At the same time the epidermis becomes thinner and more and more atrophic. Ultimately it may also become very itchy.

There is no doubt that in sufficient dosage estrogens can help to reverse these changes according to D. I. Williams (*S.P.C.* 29:75, 1956). Indeed, it has been shown by examination of skin removed from patients before and after treatment with estrogens that the collagen becomes plumper and the epidermis becomes thicker.

Applied externally, there is no doubt that penetration of the skin and absorption into the circulation occurs. There is no risk of producing cancer of the skin by treating it with a cosmetic cream containing the small percentage of estrogen used by the cosmetic manufacturers. Even the higher strengths of creams sometimes used for therapeutic purposes do not carry this risk of causing cancer.

Since the strength of these hormone creams is so low, not enough even to produce systemic effects, it might well be asked whether they produce any effect other than that which could result from the cream base in which they are embodied.

There is satisfactory evidence from experiments both on animals and on women that changes in the skin do result from the regular application of these tiny doses of estrogens. The evidence suggests what would be expected, that the improvement in skin texture occurs more obviously in the older age groups. A young, healthy woman with normal uterine function has already circulating in her blood stream all the estrogen she needs to keep her skin fresh and supple. The wrinkling of old age is more noticeably improved.

Stannous Fluoride in Dentifrices

F. Brudevold, L. T. Steadman, D. E. Gardner, J. Rowley and M. F. Little, of the Eastman Dental Dispensory and the University of Rochester, in work supported in part by the Bristol Myers Company and in part by contract with the U. S. Atomic Energy Commission, investigated the uptake of tin and fluoride by intact enamel and a summary of their paper in the *Journal of the American Dental Association*, vol. 53, p. 159, 1956 follows:

"Intact enamel was exposed to solutions of stannous fluoride, stannous chlorofluoride, sodium fluoride and a suspension of a commercially available stannous fluoride toothpaste. Both tin and fluoride were taken up from solutions of stannous fluoride and stannous chlorofluoride, but no significant uptake could be detected from the stannous fluoride toothpaste. The uptake of tin was greatest at a low pH and appeared to be absent at the nearly neutral pH of the stannous fluoride paste. More fluoride was taken up from solutions of sodium fluoride than from the solutions of stannous fluoride; both solutions contained the same amount of fluoride. Stannous fluoride treated teeth became brown on exposure to hydrogen sulfide."

Perfumer's Shelf

Perfume Compounding

A perfume is composed:

(1) Of a very volatile "head" or top note.

(2) Of a "body," which gives the general note.

(3) Of a "tail," which makes it cling.

The whole art of the master-perfumer consists of proportioning the different elements, which vary considerably in odor and volatility, to make of them a single whole which retains its potency in time.

The Head is represented by very powerful substances of high volatility, in small doses, or by certain substances endowed with special exalting properties. Both are used for the purpose of intensifying and giving vigor, but without greatly altering the main note, which they must never cover up. Phenylacetic aldehyde is one of the most typical examples.

All the normal aldehydes, C_9 to C_{12} or other products like Peach lactone, incorrectly termed aldehyde C_{14}, or methyl heptin carbonate, can act like phenylacetic aldehyde in small doses, not exceeding 5 per mille.

Eugenol, isoeugenol, carvone, bromstyrole, diphenyl oxide, can be used in rather larger proportions, i.e., up to about 15 per mille.

Lemon, lime, orange, bergamot, clary sage oils, etc., are used in still larger proportions (from 50 to 100 per mille).

Benzyl acetate, the phenylacetates, salicylates, butyrates, etc., are also used; everything depends on the note desired.

The Body is the heart of the perfume and is responsible for the characteristic note, the one which is at once recognized.

There must therefore be a considerable quantity of a simple substance: lavender, ionone, amyl salicylate, for instance, or of a simple mixture in which two or three powerful elements form an accord, an harmonious contrast.

The Tail should contain the fixative elements, which make the perfume cling, restraining the complete volatilization of the Body and thus forming a rounded-off background, blunting the too sharp angles of the Body and softening it.

These are for the most part relatively non-volatile substances, heavy, solid or resinous odorants, or else neutral solvents such as the phthalates or benzyl benzoate (which also play a part in improving the price, by means of dilution).

Odorous "tails" should of course be selected with care to fit in with the general note, so that they improve it and give it pith.

Use is made above all of coumarin, heliotropin, the nitrated musks, cinnamic alcohol, cinnamates, etc., and the whole gamut of natural resinoids and balms, extracted from vegetable or animal products: benzoin, styrax, incense, Peru balsam, Tolu, vanilla . . . civet, ambergris, castoreum, Tonkin musk, and certain synthetic products of high value, either derived from the synthesis of existing substances or purely artificial, the specialties of certain firms.

Nevertheless, even in the state of alcohol-soluble resinoids, the solubility of the tail is often a troublesome problem.

High-grade products are the Flower Absolutes, which provide both head and tail and which even by themselves form a whole that is well-balanced. Their use avoids a number of difficulties, but their high price halts us on the easy road, and their use is in practice confined to de luxe products, which may contain up to 10 per cent absolutes, mainly rose and jasmin.—P. Muller, *S.P.C* 29:915, 1956.

Solubilization

The essential oils and aromatic substances possess in general very poor solubility in water. Use is nevertheless made of perfumed waters, in which are dissolved very small quantities of aromatic products: orange blossom water, rose water, etc.

To obtain higher concentrations of perfume, it is nevertheless necessary to have recourse to auxiliary substances acting as solubilizers. Employed for this purpose, alcohol and the glycols do not as a rule yield satisfactory results. On the other hand, it is possible to use with success salts of organic acids: benzoates, salicylates, thymotates, dissolved in water in high concentrations. It seems that in this case real solutions of aromatic substances are obtained.

In perfumery, other substances are more convenient to use than these salts: these are the surfactants. Some of them yield with aromatic substances transparent emulsions which have the appearance of true solutions.

"Solubilizers" are found in all classes of surfactants.

Among the anion-active substances, there are first of all the soaps; the relative ease of scenting soaps of the liquid type is well known and so, too, are the solubilizing properties of triethanolamine ricinoleate, which is the subject of a patent by Mr. Sabetay.

The alkyl-sulfates are also good solubilizers: the shampoos in which they are the active element are perfumed without much difficulty.

Among the cation-active substances, Schulman has studied solubilization with cetyl-trimethyl-ammonium bromide.

The category of the non-ionic substances yields many and varied solubilizers which are advocated for this use by their manufacturers.

It should be noted that it is not possible to give general formulas for aqueous solutions of perfumes. Each essential oil or composition, and each surfactant, calls for a special study, especially as the complex composition of technical surfactants must be taken into account.—R. Alquier, *S.P.C.* 29: 903, 1956.

Powdered Flavors

The difficulties associated with adding the ordinary type of liquid essence to a dry product are many. The first and the most important one is the difficulty of ensuring that the liquid flavor is adequately dispersed throughout the entire mass; the essence when applied is inclined to wet a portion of the mass and the mixing of this pasty mass with the rest of the dry powder is a very troublesome task. Secondly, if the liquid flavor is sprayed on to the mass, losses occur by evaporation and oxidation. Even if it happens that an even dispersion of the ordinary type of liquid flavor is achieved, storage and deterioration problems arise. These may be said to increase with the fineness of the dispersion of the flavor. The finer the state of dispersion the larger will be the surface area of the flavor exposed to air and consequently the greater the risk of evaporation and deterioration due to oxidation.

Powdered flavors have the following advantages:

(i) They are easy to incorporate in dry mixes since they are dry and run freely.

(ii) They are non hygroscopic.

(iii) Oxidation, evaporation and polymerization losses are avoided.

(iv) They ensure that the flavor is properly and evenly dispensed.

(v) Full retention of flavor is insured.

(vi) Better flavors can be obtained since in the formulation, bodies can be used which owing to their nature cannot be incorporated in a liquid type flavor.

(vii) Higher concentrations of flavor constituents are possible since no solubility problems arise.

Powdered flavors are really very minute droplets of liquid flavors which are inclosed or "locked-in" a solid protective casing. This insures that the delicate constituents of the flavor are protected from air, sealed up and not released until the finished product is processed for consumption.

These special type flavors require technical skill and specialized and costly plant in their manufacture. The liquid flavor is mixed with a solution of the coating material for which a number of substances have been suggested, but certain natural gums have proved most satisfactory. The whole mass is dried in a spray dryer and the resulting product is a free flowing powder in which the minute droplets of the liquid flavor are completely encased by a covering of the solid medium used as a base.—*P.E.O.R.* 47:254, 1956.

Indian Oils

The oil of Champaca is obtained from *Michelia champaca* or Champa flowers. It is an evergreen tall tree, a native of India. It grows throughout southeastern tropical Asia, particularly in Java, the Philippines and India. It grows abundantly in the Ganjam District in South Orissa. Its flowers are golden yellow in color and emit a very pleasant odor. In India, perfumers utilize the flowers for making champa attar but do not make champa oil.

The oil of champa was made at Perla-Kimedi (District Ganjam) by distilling the flowers and extracting the condensate with purified benzene. The percentage yield of the oil determined varied between 0.064-0.067 per cent.

To determine the composition of oil, it was fractionated under vacuum. As the quantity of oil was small, quantitative estimations could not be done. Cineole, isoeugenol, benzaldehyde, phenylethyl alcohol and methyl anthranilate were found present in the oil. The solvent extraction method was also used to prepare the oil. The weight of concrete obtained was 0.26 per cent, which on steam distillation produced 26.3 per cent oil on its weight or 0.068 per cent on the weight of flowers.

Acorus calamus L. (Fam. Araceae) known in Hindi as Bach is a semi-aquatic perennial growing wild in damp, marshy places. It is indigenous to India and Burma. The dried rhizomes are employed in medicinal preparations and for the flavoring of liqueurs. Its oil possesses superior germicidal properties and is also employed in perfumery. It has a peculiar spicy odor and blends well in compositions of the heavier Oriental type.

The rhizomes of *Acorus calamus* L. were purchased from the local market and distilled.

The oil consisted mainly of asarone 80.1 per cent, along with calamene, eugenol-methyl-ether, calameneol, and palmitic ann other fatty acids, etc.

Indian spearmint oil, isolated from the plant *M. viridis* L., has been chemically investigated for the first time. The plant grown under strict botanical control, on steam distillation, gave 0.23 to 0.31 per cent of a pale yellow oil. Maximum yield was obtained by using mixed fertilizers and amounted to 69 lb. per acre. Oil has been found to contain *a*-pinene, phellandrene, dihydrocarvenol and its acetate (all in traces), and 1:8 cineole (31 to 34.6 per cent). Its main constituent (47.6 to 54.4 per cent) is a new monoterpenic glyoxal ($C_{10}H_{14}O_2$). This new monoterpenic derivative has been named as "mint glyoxal." It forms only monosemicarbazone and shows strong absorption in the u-v region. It is the first specimen of a glyoxal derivative isolated from essential oils. Indian spearmint oil also contains a non-semicarbazone forming liquid (eight to nine per cent) which is somewhat similar to mint glyoxal and shows strong absorption in the u-v region.—*Soap, Perfumery, Cosmetics.*

Absosynth Jasmin

Aromatic Products, Inc. of New York announces the development of an accurate reproduction of natural absolute jasmin called "Absosynth Jasmin." It is said to possess lasting sweetness and may be used as a substitute for all or part of the natural absolute.

Chlorpromazine Toxicity

Neurotoxic reactions were observed by R. A. Hall and R. B. Jackson (*J.A.M.A.* 161:214, 1956) in 36 of 90 patients who received chlorpromazine over a period of about two months.

The syndrome resembled paralysis agitans. Intensity of symptoms was not strongly correlated with dosage or psychiatric improvement, and there was no relation to hepatic dysfunction.

Improvement generally occurred within a month of the time when administration of chlorpromazine was discontinued, but six patients still showed neurological signs 60 days or more thereafter.

New Pharmaceuticals

Neomycin - Mycostatin Tablets (E. R. Squibb & Sons) contain 0.5 gram of neomycin sulfate and 125,000 units of mycostatin and are intended for the control of intestinal flora before gastrointestinal surgery. Tablets are supplied in bottles of 20 and 100.

Preludin (Geigy) is 2 - phenyl - 3 - methyltetrahydro - 1,4 - oxazine hydrochloride and is intended for use as an appetite depressant, with claims for reduced side effects. It is available as pink, scored 25 mg. tablets in bottles of 100.

Roxel Elixir (Sharp & Dohme) contains, per 15 cc., 0.1 mg. reserpine, 5 mg. each of thiamine hydrochloride and pyridoxine, 10 mg. of niacinamide and 25 mcg. of vitamin B_{12}. The vitamins have been selected for their role in the maintenance of integrity and function of the nervous system. Roxel is supplied in pint bottles.

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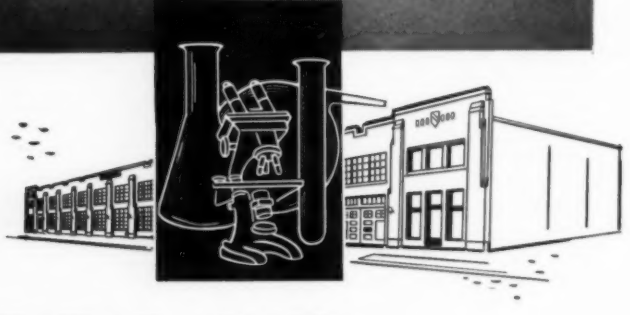

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Advancing Therapy

Grippe Vaccine

This was announced by the Public Health Service and the Navy Department simultaneously with the publication of the results by the American Medical Association Journal.

The vaccine was developed by Health Service scientists at the National Institute of Health last November. It has since been discussed at medical meetings.

Laboratory tests with three types of virus showed the vaccine had induced the formation of protective antibodies in the blood, the report said.

Between January and April this year, 4,000 recruits were vaccinated at the Great Lakes Naval Training Center in Illinois with 12,000 unvaccinated recruits serving as controls.

The tests were made at the base because recruits coming from all parts of the country had been found to be especially susceptible to respiratory diseases characterized by fever. These are diseases commonly called grippe, and not the non-feverish infections designated as the common cold.

There are thirteen known types of adenovirus. The three incorporated in the vaccine—Types 3, 4, and 7—are the most common causes of respiratory virus diseases in the military. Only Type 4 was found to be prevalent in the field trial. Types 1, 2 and 5 are found principally in children.

"All evidence indicates that the vaccine induced a substantial reduction in the occurrence of acute febrile respiratory diseases associated with Type 4," the researchers reported.

It was noted that "similar results have been obtained in vaccine studies by Army investigators working with the same group of respiratory viruses."

Gibberellic Acid

Gibberellic acid has been shown to stimulate growth in field crops such as wheat, oats, clover, the grasses (including corn), and tobacco. It has also speeded growth in vegetables such as peas, beans, tomatoes, cucumbers, and others. And it promotes growth in ornamental flowers, shrubs, and even trees.

Besides speeding growth, gibberellic acid has other potential uses. In scientific experiments, it has been shown to break dormancy in specific plants, to stimulate germination in certain seeds, to reverse dwarfism, and to induce flowering of biennials in the year in which they wouldn't ordinarily flower.

Gibberellic acid is much more vigorous in its growth stimulation than another group of plant stimulants known as auxins. It is also more easily controlled. While the auxins inhibit growth at relatively high dosages, comparable dosages of gibberellic acid cause good growth stimulation for extended periods of time. Extremely minute amounts of the chemical are needed to give plants a growth spurt.

Under controlled conditions, gibberellic acid has been applied successfully in four ways: sprayed onto the leaves, fed through the roots, injected into the stem, and rubbed onto the stem as part of a lanolin paste.

One of the major problems to be surmounted before the full usefulness of gibberellic acid is known is the vast amount of investigational work to be completed. This work must be done by qualified scientists in different parts of the country, under different conditions, and on an appalling number and variety of plants.

This promising chemical has been under investigation by Eli Lilly and Company, of Indianapolis, for potential agricultural and other uses. Lilly has studied the chemical as a plant growth stimulant in both climate-controlled laboratories and under field conditions. Under laboratory conditions, gibberellic acid has increased the growth rate of some plants by five times.

Gibberellic acid is obtained from cultures of a fungus called *Gibberella fujikuroi*. Technically, the chemical is tetracyclic dihydroxy-lactonic acid, with a formula of $C_{19}H_{22}O_6$.

Up to the present time, production problems have made it impossible to obtain a sufficient quantity of the chemical to supply even research requirements. However, with its experience in production of biologicals and antibiotics, Eli Lilly and Company has been successful in producing a quantity of pure gibberellic acid. This material is being distributed to scientists at agricultural colleges and other institutions in the interest of obtaining more information about this promising plant growth stimulant and growth regulator.

Bonadoxin for Nausea

Morning sickness of pregnancy has been effectively prevented by the combination of meclizine and vitamin B_6 (Bonadoxin) in 61 of 65 pregnant women and in one husband who suffered "sympathy sickness" whenever his wife became ill, according to C. R. Crawley (*West. J. Surg., Obst., Gynecol.* 64:1956). According to the physician, Bonadoxin is an "effective therapeutic agent for the distressing symptoms of nausea and vomiting of pregnancy. The complete absence of side effects, such as drowsiness, dry mouth or stuffy nose, makes it one of the most satisfactory antiemetic preparations available to date." The only unsuccessful results were in four patients who had specific complications to their pregnancy.

Novobiocin

Novobiocin (Cathomycin) was extremely effective against strains of gram-positive bacteria in vitro according to A. M. Rutenberg, P. Shapiro and F. Schweinburg (*N. E. J. Med.* 255:325, 1956) including those found to be resistant to penicillin, the tetracyclines and erythromycin.

Patients with a variety of surgical infections due largely to strains of hemolytic staphylococci responded to the drug, which was effective in the treat-

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ment of infections that had failed to respond to other antibiotics.

After oral administration of 0.25 gm. every six hours novobiocin was absorbed rapidly, and plasma concentrations ranged from 6 to 46 microgm. per milliliter.

The drug was well tolerated. Only two of 90 patients had mild gastrointestinal side effects. There were no other systemic reactions.

Arthritis Treatment

M. Fisher (*Lancet*, p. 18, July 7, 1956) treated a series of 25 patients with disabling progressive rheumatoid arthritis with either hydrocortisone (40 to 60 mg. daily) or prednisolone (10 to 15 mg. daily) and concluded after 12 and 24 weeks of treatment that "the prednisolone group fared slightly better." According to the author, corticosteroid hormones are prescribed for severe disheartening cases because of the great subjective benefit and increase in functional capacity that they bring about in a short time but he questions the justification of the therapy in view of the hazards and secondary adrenocortical involution and concluded that "the results have not justified prolonged prednisolone therapy for these patients".

Tortoises

A British investigator looking into the matter of Salmonella infection has reason to believe that tortoises may in time rid themselves of the organism. To obtain experimental verification, he has requested readers of *The Lancet* to send him samples of tortoise feces: "These are usually hard and inoffensive, and travel well in a small tin or vial. Postage will, of course, be refunded."

11-Desmethoxyreserpine

11-Desmethoxyreserpine (*alpha* desmethoxyreserpine) a new ester alkaloid isolated from *Rauwolfia canescens*, was examined by E. W. Packman, D. D. Abbott and J. W. E. Harrisson (*J. Am. Pharm. Assoc. Sci. Ed.* 45:89, 1956) for its pharmacologic effects upon rodents and dogs. This alkaloid possesses hypotensive and tranquilizing effects comparable to reserpine. In addition, it produces hypothermia, increased salivation, miosis, and increased gastric acid secretion.

11-Desmethoxyreserpine produces a condition characteristic of general parasympathetic predominance. The results obtained thus far seem to be in close agreement with those obtained by Muller, Schlittler, and Bein and by Plummer, Schneider, Trapold, and Barrett on reserpine. Therefore, this new alkaloid isolated from *Rauwolfia canescens* may not only prove to be an able substitute for reserpine, but may also play an important role in determining which structures are necessary for the pharmacologic action of Rauwolfia alkaloids.

Glyceryl Triacetate Fungicide

Glyceryl triacetate (triacetin) in an ointment and in an alcoholic solution was used by S. A. M. Johnson and J. L. Tuura (*A.M.A. Arch. Dermatol.* 74:73, 1956) in the treatment of 80 patients with various types of fungus and yeast infections without causing any untoward reactions.

Infections due to T. mentagrophytes, M. lanosum, E. floccosum, M. furfur, and Nocardia tenuis responded well to treatment.

T. purpureum infections in several instances, except for the nails, cleared at the end of four months of therapy.

Superficial infections of C. albicans and cutaneous infections of B. dermatitidis did not respond to glyceryl triacetate application.

Nineteen cases of M. audouini infection of the scalp were treated, and in nine cure was obtained. The rest of the group showed improvement and no spread of infection.

Diphenhydramine Anesthetic

Clinical trial of diphenhydramine as a local anesthetic for minor surgical procedures of the skin in a small series of cases reported by C. G. Steffen, M. Zimmerman and R. Mihan (*A.M.A. Arch. Dermatol.* 74:76, 1956) showed that a one percent solution of diphenhydramine was at least as satisfactory as two per cent procaine. Diphenhydramine in a concentration of 0.5 per cent, however, was not as satisfactory and was abandoned after 10 cases. A one per cent solution of diphenhydramine would seem to be a satisfactory substitute for two per cent procaine in patients who are allergic to procaine or who obtain little or no anesthesia from procaine.

Long-Acting Sulfonamide

Administration of sulfonamides suspended in an oral fat emulsion vehicle twice daily produced sustained therapeutic blood levels and controlled symptoms of the infection without causing reactions. L. J. Stephens and W. E. Henrickson (*Lancet* 75:437, 1955) reported that sulfadiazine in a fat vehicle gives better protection against streptococcal infections in mice than sulfadiazine in an aqueous suspension. In 22 patients with broncho- or lobar pneumonia, an oil emulsion containing triple sulfas—sulfamethazine, sulfadiazine and sulfamerazine — given every twelve hours produced therapeutic results equal to aqueous fulfonamides given every four or six hours.

Motion Sickness Nasal Medication

Scopolamine administered intranasally was effective against motion sickness as reported by H. I. Chinn, R. W. Hyde, L. S. Milch (*Proc. Soc. Exptl. Biol. Med.* 90:666, 1955) whether the drug was given by spray 30 minutes prior to exposure to swing sickness or as nose drops 15 to 20 minutes after take-off in actual flight testing. Scopolamine was completely ineffective when given orally or sublingually 15 to 20 minutes after take-off. Nose drops were more consistent in therapeutic effectiveness than the nasal spray because the dose of the former could be more accurately controlled. This difficulty with intranasal spray might be obviated if small, disposable spray bottles holding only a single dose could be produced economically.

Buffered Aspirin

In a paper read to the Federation of American Societies for Experimental Biology, R. C. Batterman of the Flower-Fifth Avenue Hospital in New York City reported that intolerance to buffered aspirin increases progressively and reaches the point where it is not as well tolerated as plain aspirin the treatment of arthritis. In addition, tests disclosed that plain aspirin and buffered aspirin were absorbed from the gastro-intestinal tract in approximately the same time, and gave approximately the same total salicylate blood level.

New Pharmaceuticals

Hydeltracin (Sharp & Dohme) is a lotion with a jelly-type base combining micronized prednisolone and neomycin. It is available in a 15 cc. plastic squeeze bottle.

Velmol (E. L. Patch Co.) is a stool-softening wetting agent for the relief of temporary constipation. Each capsule contains 60 mg. of dioctyl sodium sulfosuccinate and the product is available in bottles of 30 and 100.

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Skin Research

Sebum

The composition of human sebum has been studied by several workers and the results of these investigations show that human sebum is a mixture of free fatty acids (28 per cent), triglycerides (32 per cent), waxes (14 per cent); esters of normal and branched-chain aliphatic alcohols), cholesterol (four per cent, about half as esters), squalene (five per cent) and other hydrocarbons (eight per cent). The remainder (nine per cent) contains a small amount of dihydrocholesterol, several sterol-like substances including a small amount of pro-vitamin D, and oxidation products of squalene.

The fatty acids of human sebum are of considerable interest. The first detailed investigation showed that these consisted of an homologous series of normal straight chain fatty acids with all members from C_7 to C_{22} (except C_{19} and C_{21}) present. Unsaturated acids were also present and, in these, the location of the double bonds differed from that found in the more commonly occurring unsaturated acids.

Recently James and Wheatley examined the fatty acids from human forearm sebum by means of vapor phase chromatography and were able to confirm previous results.

The principal fatty acids in human sebum were found to be myristic acid (6.6 per cent), an unsaturated C_{16} acid not identical with palmitoleic acid (6.9 per cent), palmitic acid (25.5 per cent), oleic acid (29.0 per cent) and stearic acid (9.4 per cent).

Squalene is the principal hydrocarbon present in human sebum. Both straight- and branched-chain paraffins were also found in both forearm surface skin fat and in hair fat, but more careful investigation has shown that the straight-chain paraffins were almost certainly contaminants.

The waxes of human sebum are esters of long-chain alcohols and fatty acids. Hougen has examined these alcohols in detail and has shown the presence of three series: normal saturated alcohols; branched-chain saturated alcohols with the branch at the penultimate carbon atom; and normal unsaturated alcohols.

It has been known for a number of years that vitamin D is produced when sebum is irradiated with ultra-violet light, but so far the pro-vitamin has not been successfully identified. Apart from this, very little fat-soluble vitamin appears to be present, for neither vitamin A, β-carotene nor vitamin K has been detected. A small amount of vitamin E is present, but no more than occurs in any other body fat. On the other hand, appreciable amounts of other antioxidants appear to be present, but the nature of these has not been established. Recently the presence of steroid hormones has been suggested and 17-ketosteroids, estrogen and occasionally 3-hydroxy-steroids appear to be present.

One very important finding from the chemical investigations of the composition of sebum is that the composition seems to be a unique property of the animal from which it originated. It is almost possible to take a specimen of sebum of unknown origin, analyze it and determine the animal from which it came.

Recently the use of acetate labelled with radioactive carbon has been introduced into the study of sebaceous activity. In these studies skin from the human scalp and from the forearm was used. These studies indicate that the human skin is able to synthesize fatty acids, sterols and squalene, but while the main site of squalene synthesis is the sebaceous gland, the main site of sterol synthesis is the keratinizing epidermis.

It is now well established that human sebum possesses bactericidal and fungicidal properties associated with the long-chain unsaturated and the shorter-chain saturated fatty acids respectively. The role this plays in the causation of skin diseases has yet to be elucidated. The spontaneous cure of ringworm of the scalp in children on reaching the age of puberty was thought to be due to a change in the composition of the sebum which occurred at this time, the adult sebum containing a greater concentration of the fungicidal fatty acids. Now it is considered more likely that the marked increase in the rate of sebum secretion which occurs at puberty causes an increase in the concentration of the fungicidal fatty acids on the skin rather than an actual alteration in the composition of sebum.—V. R. Wheatley, *S.P.C.* 29:181, 1956.

Skin Penetration

Methods for studying the penetration of topical agents through dead human skin are described by P. Flesch, A. Satanove and C. S. Brown (*J. Invest. Dermatol.* 25:289, 1955). These *in vitro* tests include spot tests in the corium, sulfhydryl determinations in the isolated epidermis and colorimetric estimations in dermal extracts.

Under the experimental conditions salicylic acid was found to penetrate most rapidly from Plastibase, Hydrophilic Plastibase and lanolin. Carbowax was less efficient and petrolatum was slowest in releasing salicylic acid. Sodium salicylate did not penetrate through the epidermis from any of the bases tested.

Vitamin A did not penetrate through human skin, unless salicylic acid was also added to the ointment. Phenol penetrated very rapidly into the corium from all vehicles tested.

On the basis of sulfhydryl inactivation, it was concluded that ammoniated mercury penetrated better from Hydrophilic Plastibase than from other ointment bases tested. Sulfur decreased sulfhydryl concentrations to the same degree, regardless of the ointment base used.

An excellent correlation was found between the penetrating ability and sulfhydryl inactivating capacity of potassium bichromate in two different ointments.

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Dandruff

To understand the nature of dandruff it is necessary to examine the structure of the skin. The outermost layer consisting of dead keratinized cells is continuously, but imperceptibly, being shed in the form of minute flakes. Normally this loss is exactly balanced by the production of new cell tissue by the bottom or basal layer. On occasion this fine balance is disturbed and there is excessive desquamation followed by a compensatory increase in the number of new cells produced by the basal layer. The cast off cells, in the presence of moisture, cohere and become apparent as scales.

Such a condition constitutes dandruff in its simplest form, and is known technically as *Seborrhoea sicca*. Usually, there is also an increase in the production of sebum. Thus, the scalp is rendered greasy, causing the desquamating scales to adhere in large and unsightly oily masses. This particular form, which is that generally encountered is known as *Seborrhoea oleosa*.

The greasy scalp constitutes an excellent culture media favoring the development of the various bacteria normally present even on the scalp of a healthy person. These include *Pilyrosporum orale* (spore of Malassez) and *Staphylococcus albus*.

The cause of dandruff is not known with certainty. It was formerly attributed directly to the *Pilyrosporum orale*, but modern thought is more inclined to the belief that dandruff results from hormonal disturbance, and that the activation of the bacillus is a secondary matter as outlined above. Support for this theory is given by the fact that dandruff is uncommon before the age of puberty, at which time the sex hormones become active, while it frequently becomes more troublesome during the climateric, at the time of menstruation or after parturition, at which periods it is known that a temporary hormonal derangement frequently occurs. The condition may be aggravated by constitutional disturbances, incorrect diet and physical conditions such as excessive exposure to winds or sunshine, or the use of harsh shampoos and "tonics."

Local treatment should include consistent attention to combing, brushing and shampooing. Hair creams and brilliantines are best avoided since they invariably contain oil or grease.

The hair should be shampooed at least once a week, or more frequently if it is excessively greasy or is unduly exposed to a dirty atmosphere. By this means dirt, dust, scales, grease and agents likely to cause infection are removed, and the general appearance of the scalp and hair improves. The choice of a suitable shampoo is important and merits detailed consideration.

Ideally, a shampoo for the treatment of dandruff should:

(a) Remove excessive grease without drying or defatting the skin.

(b) Remove scale and other debris, and thoroughly cleanse the scalp.

(c) Not be strongly alkaline or unduly acid.

(d) Not contain ingredients or medicaments which will induce untoward reactions on account of sensitization.

(e) Have adequate bactericidal action without irritating the skin.

(f) Have an anti-pruritic action to counteract the itching which is almost invariably an accompaniment of dandruff.

In addition, since the preparation is likely to be used for some time it should have all the attributes of a good shampoo.

Solutions of green soft soap form reasonably efficient shampoos, but are invariably alkaline and, therefore, inclined to further irritate an already sensitive scalp. For this reason they are generally best avoided. In practice, adequate cleansing action is afforded by some of the newer detergents, and if these are properly selected the skin will not be defatted. Anionic detergents of the alkyl sulfate variety are particularly favored for this purpose.

Of the antiseptics available hexachlorophene is perhaps the most suitable, since it is taken up by the skin and retained for considerable intervals, exerting a constant bacteriostatic and bacteriocidal effect on the residual facterial flora.

Coal tar is often included in preparations of this nature because of its well-known anti-pruritic and skin stimulant action. It is, however, difficult to disguise the persistent and characteristic smell, while the possibility of sensitization reactions arising through prolonged use cannot be excluded. Synthetic preparations having a low sensitization index are now available, and are to be preferred.

In recent years selenium sulfide has been widely used as an anti-dandruff agent, and is undoubtedly effective in a high proportion of cases. There is, however, some evidence to show that selenium sulfide does induce excessive oiliness of the scalp in a number of cases, and that toxic reactions are by no means uncommon. The nature of the medicament is, therefore, such that it requires to be used under medical supervision.—N. T. Carter, *Retail Chemist*, 1956, p. 62.

Hair Structure and Growth

In composition, the hair has three important layers. The outer sheath is composed of tiny overlapping transparent scales arranged one on another like tiles on a roof. Because of this arrangement and the compactness of the scales, the outer layer forms a very effective shield for the internal part of the hair.

Present in the outer layer of the hair are small openings which hold the oil responsible for hair luster; lacking this oil, the hair must naturally appear dull and coarse. The cells of the outer layer also hold the pigment granules which give the hair its color.

The second layer (cortex) is composed of stretched out cells which give the hair its flexibility. When these cells are injured in any way the hair breaks. In other words, the cortex is composed of a type of tough, rubberlike cells which actually can be stretched. This gives to the hair its natural elasticity.

The inner layer is known as the medulla which is composed of several rows of cells placed side by side. Quite often, due to advancing age, the medulla is entirely missing and the hair becomes impaired accordingly.

Although originally the hair is formed slightly beneath the outermost layer of the skin, like any plant the roots go deeper and the hair eventually grows from well beneath the surface of the scalp.

Each hair sprouts out of a pocket-shaped pore opening called the hair follicle. At the bottom of this follicle, there is a nipple-shaped mound called the papilla, which has grown up from the underlying "true skin." The papilla contains many blood vessels which bring to the hair its proper nourishment. As long as the hair follicle and papilla are connected, and are healthy, a new hair grows to take the place of the one that falls out. The so-called "root" which often surrounds a fallen hair is actually merely the hair bulb and is no indication that the hair follicle is no longer capable of producing another hair.—H. D. Dammers, *Retail Chemist*, 1956, p. 37.

(Continued from page 317)

facturers a knowledge that makes it comparatively easy for any of them to spread out into branches of the field which they have long ignored. Furthermore, the fact that cosmetic manufacturers and proprietary manufacturers today have real research staffs, while the pharmaceutical manufacturers have greatly increased their research staffs, causes all of these companies to come up with outstanding products which are better fitted to branches of the industry other than the one in which they are primarily engaged.

So far as the pharmaceutical manufacturers are concerned, it is quite often the case that a drug product originally thought to be of use in one or more diseases might not fulfill its promise in this regard. However, an entirely different application might be found for the product, and this, in some instances could strongly influence the manner in which it should be marketed. Therefore, many manufacturers of all types in this industry are asking themselves why they should be restricted to one branch of the industry or to one method of marketing of their products.

Pharmaceutical manufacturers who would market an over-the-counter product in a proprietary fashion under their own names are faced with the possibility that if the product proved to be as popular as they would like, they might have great difficulty in restricting its distribution to drug stores. And they realize that if distribution of such a product should get out of hand and the product be offered for sale in all sorts of places, it would not cause the company great damage in their relations with the members of the medical profession, but also with the druggists, and this could be disastrous so far as their main business activities are concerned.

However, the desire to expand and report greater sales and earnings year after year is driving many manufacturers to consider activities which they formerly refused to consider at all. Because of the constantly increasing population and expendable income of this country, it is believed that expansion in all branches of this industry is certain. Therefore, many manufacturers believe that if they should turn some of their attention and their talents to getting a foothold in branches of the industry which they have neglected, certain that they can make greater headway in this way than by continuing to increase their aggressiveness in the sharp competition which they are facing in the branch to which they have long given their full attention.

AMBERGRIS

(Continued from page 323)

ciples are in part chemically related to those of ambergris. One composition technique that can be recommended adds small amounts of Ambropur to clary and labdanum. The effects are convincing, especially with somewhat inferior oils or extracts whose scent note is considerably exalted. Top effects can be obtained by adding from 0.5 to one per cent to terpeneless oils.

(Continued on page 396)

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Trade Literature

Acetophenone

Carbide and Carbon Chemicals Company, 30 East 42 Street, New York 17, has issued technical bulletin F-6970, which is an eight-page publication on acetophenone. Information is given on its properties, specifications, shipping containers, constant boiling mixtures, and solubilities. Included in the section on applications are descriptions of its use in the manufacture of certain drugs.

Anhydrous Aluminum Chloride

Solvay Process Division, Allied Chemical & Dye Corporation, 61 Broadway, New York 6, has issued Product Development Bulletin AC-1 covering anhydrous aluminum chloride.

Pitfalls in Toxicity Studies

New Drug Institute, 130 East 59 Street, New York 22, has issued a brochure entitled Some Pitfalls in Toxicity Studies, and written by Dr. Bernard Davidow, director of pharmacology.

Tablet and Capsule Counters

Pepper & Sons, 300 Fourth Avenue, New York 10, have issued a four-page folder describing four models of Perfektum Tabcounts for automatic counting of tablets or capsules. The latest model is a Duplex Conveyor Model which processes up to 4,200 bottles per hour containing 100 tablets or capsules.

Variable Speed Transmissions

Maureymatic Division, Maurey Manufacturing Corporation, 2915 South Wabash Avenue, Chicago 16, has issued a twelve-page, two color booklet describing a new line of variable speed transmissions providing simple low cost speed adjustment for machines using up to 10 hp V-belt drives.

Mixing Propellers

Craddock Equipment Company, 1507 A Street, Wilmington, Del., has issued a four-page folder describing their Mixall-Mixers with "claw" mixing propellers, which were designed, engineered, and patented by Carddock.

Loading and Unloading

Wilkie Company, 5520 Arch Street, Philadelphia 39, has issued a 24-page illustrated booklet giving descriptions of time-saving leading and unloading systems for tracks, trailers, box cars, handling cartons and bags, using Wilkie Telescopic Conveyors, Flopover Curves, and Mobile Docks. Drawings, diagrams, and installation photographs are given.

Fluid Chemical Facilities

The Facilities Catalog of Fluid Chemical Co., 878 Mt. Prospect Avenue, Newark 4, N. J., describes, through the use of photographs the filling machines, packing machines, quality control methods, modern storage equipment, warehousing facilities, research laboratories of the company for giving close attention to the products of their customers.

Continuous Dryers

A new eight-page, two-color brochure describes new "Surface" high-speed, low-temperature dryers for continuous drying operations, has been issued as Bulletin K-156 by Air Conditioning and Drying Division, Surface Combustion Corporation, Toledo 1, Ohio.

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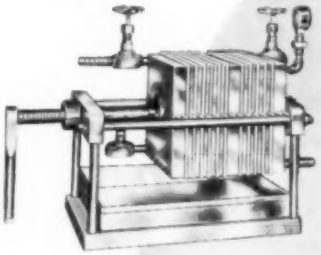

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(Continued from page 394)

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(Continued from page 325)

ment or you know what you will order when replacements are needed.

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I have been asked at what point do you change from hand operation to semi-automatic operation. It would seem to me that if you could keep semi-automatic equipment operating for 50 per cent of the time it would be economical to consider the change. When the sales reach the point where fully automatic equipment can be kept busy 70 per cent of the time, then you can consider the fully automatic equipment. Others may quarrel with these figures but for average conditions I think they are about right.

Some of the other factors to be considered when planning to go from a hand operation to semi-automatic or from semi-automatic to fully automatic are

1) How long will this particular package be kept in the line? Long enough to pay for equipment?
2) If a new package is introduced how close will its measurements be to the old one?
3) Can the new equipment be made so that by adjustment or change parts, it can be used for another package? (Important to keep as flexible as possible.)
4) When considering fully automatic equipment

(Continued on page 400)

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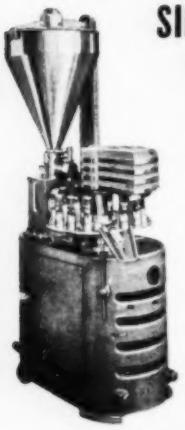

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Industry's Books...

Chemistry and Uses of Pesticides, *Second Ed., by E. R. de Ong, Ph.D., Consulting Entomologist, 334 pp., Reinhold Publishing Corp.: New York, (1956), cloth,* **$8.75.**

This is a modern treatment of the entire pesticide field. It includes valuable information on insecticides, fungicides, herbicides, rodenticides, repellents and seed disinfectants with much data on chemical and physical properties, toxicology and compatability. Almost half the book is devoted to detailed instruction on the use of synthetic organic compounds, many not previously listed. Time repellents for mosquitoes, biting flies, ticks, insect attacking stored products, and compounds for rodents are included for the first time. A valuable dictionary of 500 compounds shows the chemical and common names with brief, functional definitions.

Synthetic Drugs, A Handbook for Chemists, Physicians and Pharmacists, *by H. Ronald Fleck, M.Sc., F.R.I.C., 380 pp., Clearer-Hume Press Ltd., London, (1955), cloth,* **$12.50.**

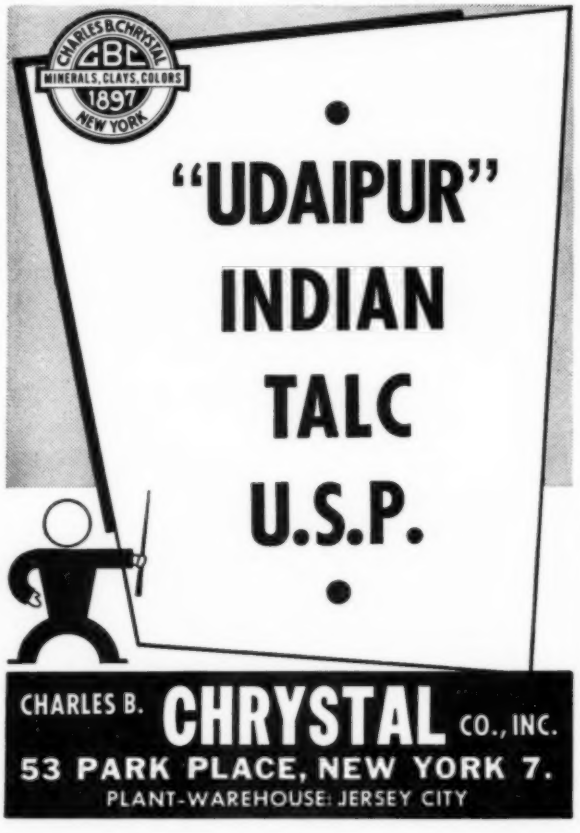
The work of a consultant with wide pharmaceutical and industrial experience, this is the first book on this expanding field of knowledge to collate so adequately the synthetic, the analytical and the clinical aspects. The groups of drugs are treated in 15 chapters, ranging from Amoebacides and Anaesthetics to sulphonamides and vitamins, each discussing the group in general and its most important members. There are adequate references, and 500 printed structural formulae clarify the chemical principles. This should be a welcome book in the laboratories of all concerned with the production, study, testing and supply of these substances.

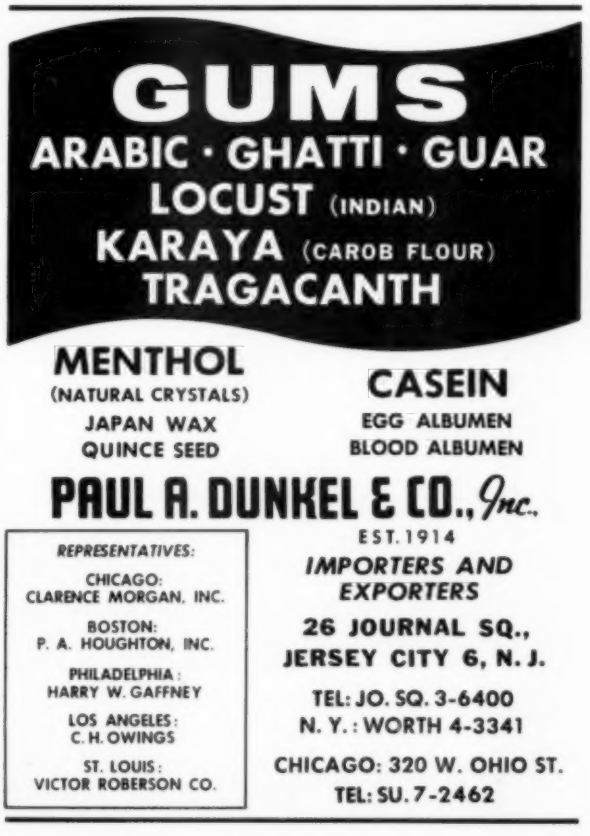
Organic Chemistry, *by Louis F. and Mary Fieser, Department of Chemistry, Harvard University, Third Ed., 1112 pp., Reinhold Publishing Corp., New York, (1956), cloth,* **$10.**

The period since the 2nd edition of this work (1949) has been rich in new developments now included in this new edition. Very recent developments introduced in the 3rd edition include the structures of reserpine and vitamin B_{12} and the total synthesis of aldosterone. Of unusual interest is the inclusion of 454 brief biographical sketches and vital statistics of past and present chemists associated with developments cited. They aid the reader in locating material in the literature and make the book increasingly useful for reference. This new edition will prove especially useful to industrial research chemists, and medical workers involved in research.

Textbook of Organic Medicinal and Pharmaceutical Chemistry, *Edited by Charles O. Wilson, Ph.D., Professor of Pharmaceutical Chemistry, College of Pharmacy, University of Texas and Ole Gisvold, Ph.D., Professor of Pharmaceutical Chemistry, College of Pharmacy, University of Minnesota, Third Ed., 823 pp., J. B. Lippincott Co., Phila., (1956), cloth* **$11.**

It is the purpose of this textbook to describe, within certain chemical and pharmacologic classification, those substances used as pharmaceutic aids and as therapeutic agents. The authors of this book have attempted to include a discussion of all products described in the U.S.P. XV, N.F. X, New and Non-official Remedies 1955 and Accepted Dental Remedies 1955, as well as the most important pharmaceuticals reported in the periodical literature





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Write on your business letterhead for technical literature and suggested formulas.

Readers' Questions . . .

Rolling Massage Cream: *I would very much appreciate receiving from you formulas for a rolling massage cream and a vanishing cream type hair cream. We have not been able to obtain information on these subjects from available books.* LOS ANGELES.

You cannot expect books, no matter how good, to supply you invariably with workable formulas; a certain amount of experimental work is always necessary to produce finished products. A rolling massage cream is basically a vanishing cream without humectants to act as plasticizers for the film left as the water evaporates. You might start off with the following: stearic acid 20 parts, potassium hydroxide 0.5 part and water to make 100 parts. One-tenth of one per cent of methyl paraben should be added as a preservative and perfume as desired. Casein is often a useful additive, as is latex.

A satisfactory hair cream may be based upon a carbowax water mixture, the components being adjusted to give the desired consistency. Small amounts of quaternary wetting agents are often useful additives for hair conditioning action.

Thioglycolate Decomposition: *We have been told that thioglycolic acid or ammonium thioglycolate is oxidized to the dithio compound, iron acting as a catalyst. Is the presence of iron bad even when the waving solution is in well-stoppered bottles, and where does the oxygen come from for the oxidation?* SAO PAULO

Iron not only accelerates the oxidation of thioglycolates, but it also causes undesirable discoloration. There is enough oxygen dissolved in the solution (unless the water has been boiled and cooled in the absence of air before use) and in the space above the solution to cause deterioration and discoloration. A sequestering agent may bind the iron sufficiently to prevent its catalytic action and small amounts of citrates, glyconates or ethylene diamine tetra-acetic acid may be useful for this purpose.

Hair Tonic: *We would like to know if you can give us formulas for a hair lotion or hair tonic based upon pilocarpine hydrochloride or pantothenic acid.* MEXICO CITY.

Your hair tonic may contain 30 per cent of alcohol, five to 10 per cent of glycerin or one of the polyethylene glycols and water, perfume and color. Pilocarpine hydrochloride may be used in a concentration of 0.05 per cent. The use of calcium panto-

thenate and pantothenyl alcohol requires stability testing and special attention to pH values for optimum stability, the alcohol being stable over a wider range than the calcium salt. From one-twentieth to one-tenth of one per cent of these vitamins can be used.

Cream Base: *I would appreciate receiving information concerning the compounding of a vanishing cream base with a pearly luster for local anesthetics.* NEWARK.

A pearly cream may be made according to the following formula:

Stearic acid	12.0
Oleic acid	3.0
Potassium hydroxide	0.5
Triethanolamine	0.4
Glycerin	5.0
Water	79.1

After preparation the cream should be allowed to stand overnight and then stirred while cold. Pearliness increases on standing. Care should be used in selecting a local anesthetic for use with this cream, to avoid incompatibilities with the soap.

Powder Depilatory: *Can you give us a formula for a powder depilatory which when mixed with water and applied as a paste will remove superfluous hair? Any suggestions for perfuming this mixture would be appreciated.* PHILADELPHIA.

Powder depilatories contain about 35 per cent of barium sulfide or a mixture of barium and strontium sulfides along with inert powders to act as diluents and to form a paste with the water. Precipitated chalk, talc or corn starch are suitable powders and proportions should be chosen to give a satisfactory paste when water is added. The problem of perfuming these mixtures is a very difficult one, not only because of the powerful odor, but also because of the destructive action of the sulfide on the perfume mixture. Your regular perfume supplier should be able to help you with this problem.

Tyosinase-Allantoin: *Does the enzyme tyrosinase exist in the free state and is it stable? I would like to try allantoin in a hair dressing; is there any danger in its use?* PASADENA.

Tyrosinase has been isolated and purified so that crystals have been obtained. We do not know too much about this compound but would expect it to be at least moderately stable in dry form and much less so in solution. As far as we know, allantoin is non-toxic and harmless, so that there is no reason why it cannot be included in a hair dressing.

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(*Continued from page 396*)

can the semi-automatic equipment be used as is for another product or can it be rebuilt at a reasonable cost for some other product or can it be sold at a fair price?

5) Is the item a seasonable one? Rapid production should be weighed against building up inventory in your slack season.

And now we come to the third important factor, *materials handling*. If there is any doubt in your mind about your handling costs and how they compare with other plants, I would suggest you consider handling your materials on pallets because in many plants that has reduced handling costs.

A hand operated fork transporter does not cost very much and can be used in every part of the plant. Of course it must be used with pallets.

A power operated fork transporter is used the same as the hand operated transporter but with less fatigue for the operator if long hauls are necessary.

As your space requirements increase you can double tier with stackers or fork lift trucks. These may postpone moving to larger quarters or at least keep your handling costs within bounds in your present quarters. These stackers and lift trucks operate in a very narrow aisle so that aisle space is reduced to a minimum.

You may feel that your volume is so small you can't afford to pile one pallet load on top of another. In that case you can use pallet racks and store two or three pallets in the floor space of one. It is possible to move any one of the pallets without touching the others by means of your fork lift truck or your stacker.

Stackers or fork lift trucks can be used very effectively to put drums or barrels into drum racks but the capacity of the floor to carry the load should be investigated carefully before you start to double or triple tier your drums or finished goods.

For years we have used small cans of face powder to demonstrate the shade and texture but the volume has never been great enough to go into fully automatic equipment or even semi-automatic. To fill these cans quickly and cleanly has always been a problem. In a filler we used years ago, an auger turned constantly in the hopper and filling stem and can were pushed through under the auger and the excess power was caught in the box below and the powder in the can leveled off by the chute. The excess powder overflowed into a box below and the filled cans were discharged on a table where the covers were put on. Later we used a vacuum powder filler. Although this was a lot cleaner and cut down the wiping operation it was slower and more expensive.

We now place the cans in a wooden form with twelve cans in the holes. Then the lower form with slightly smaller holes is placed over the cans and the powder from the hopper in the back is pushed back and forth until all the holes are full of powder then the excess powder is returned to the hopper by the scraper. Then the upper form is removed and the lower one

now containing the filled cans is pushed along the table for the girls to put on the can covers.

We also put face powder and sachet in paper packages which are heat sealed. This type of filler can be used for many items and the finished product is relatively inexpensive.

Years ago when the hourly wage rate was relatively low we used to fill powder sachet bottles by filling a wooden box with empty bottles, pouring the powder in on top of the bottles and rocking the box to get the powder in the bottle. Then the girls would pack it in with their fingers. Then as each bottle was removed and capped, it was wiped. Nobody could afford to fill bottles that way today. Later we filled powder sachet by hand using a hopper in which an auger fed the powder down into the bottle. The next step was to fill the bottles on a duplex powder filler.

When our sale of nail polish was very small the girls used to put the brush into the well of the cap by hand but as our volume increased we got a machine to do this. The machine puts the brush into the well of the cap and kicks the cap and brush out of the way to make room for the next one. The girl takes the cap from the bottom of the hopper and places it on the press. At the same time she feeds the brush into the machine and presses the foot pedal and the machine completes the operation.

When we introduced cologne stick we filled the case with the liquid at a given temperature through hand operated valves. We are about to get a machine now which will do the filling automatically.

When we introduced Bright Night Cologne we were requested to tie the gold cord around the neck, glue the label to the cord and then scotch tape the cord ends to the bottom of the bottle. As you can well imagine this was a very costly operation. We suggested a simpler operation which was to buy the cord with a loop which could be slipped over the neck of the bottle and to which the label was already glued. This was accepted by our Art Department.

Jigs can be used many times on assembly work to make the work easier and also to reduce the cost. We use a jig made of wood to hold the one piece corrugated lambert in which we pack our Happy Traveler Bag. All this jig does is hold the corrugated until the tape is applied.

We also use a jig to hold a carton while the bottom is closed. This jig maintains the shape of the carton and makes the closing operation for the girl. There are many places that jigs can be used if the various jobs under consideration are carefully studied. When a certain company decided to make a special offer of two tubes for the price of one or some similar promotional plan, it was suggested that two cartons each containing one tube be fastened together with Scotch Tape. In checking the cost of the proposed package it was found that the cost of the labor plus the cost of the tape was very high. The solution was to buy a special carton to hold the two tubes. We ordered a

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semi-automatic cartoner so that it would handle a carton for either one or two bottles. The cost of this double pack is far less than if two single cartons were sold as a unit.

(*Continued from page 327*)

tration of a uniform volume of 0.05 ml. per gram of body weight for each dose. Ten animals were employed in each dose group and were observed for one week. The lethal dosages, 50 per cent, were calculated by the method of Miller and Tainter[2].

Results:

Dosages and mortality data are listed in Table No. 2. Deaths with both compounds occurred within 24 hours. The acute LD_{50} of ammonium thioglycolate is 3 ± 0.4 cc/kg., of monoethanolamine thioglycolate lotion is 3.5 ± 0.3 cc/kg.

Percutaneous Toxicity Studies in Rabbits

Again, we are deeply indebted to the Hill Top Research Institute, Inc. for permission to publish their extensive studies of rabbits, using a conventional ammonium thioglycolate cold waving lotion as a control. The lotions tested were identical with the lotions described in the previous test.

Procedure:

Two groups of eight female albino rabbits weighing 1.2 to 1.8 kilograms were employed as test animals. The rabbits were housed in the laboratory in individual cages and maintained on the standard diet of Purina rabbit checkers for two weeks prior to the beginning of the experiment. Each rabbit was individually identified by a tattoo number on the right ear.

The hair of each rabbit was closely clipped over the saddle area of the back. The test samples were applied to this area and distributed evenly with a glass rod.

One milliliter per kilogram of body weight of the undiluted sample was applied to the back of the rabbit five days per week for twelve weeks. Sample containers were flushed with nitrogen after each day's use and discarded after being used three times.

Erythrocyte counts, hemoglobin concentrations, and differential leukocyte counts were determined before treatment and after forty-five and ninety days of treatment. Body weights were recorded every two weeks. Total leukocyte counts were made at the end of the experiment.

After the final exposures had been completed, the animals were sacrificed by cervical fracture, bled from the carotid and jugular vessels, and examined grossly for evidence of pathology of the visceral organs. Tissue specimens were obtained from the thyroid gland, heart, lungs, liver, spleen, kidney, adrenal gland, intestine and treated skin. The sections were fixed in ten per cent formalin and prepared for histopathologic examination by the hematoxylin-eosin technique.

Results:

Four to five days after beginning the applications of the samples, the treated areas of skin of both groups developed a mild uniform erythema which persisted throughout the experiment. The groups could not be differentiated by the degree of erythema. This was the only evidence of local irritation observed. There was an absence of gross thickening, incrustation or fissuring of the treated skin.

The animals remained in apparent good health during the three months' treatment period. Food consumption and body weight trends (Table No. 3) were similar in the two groups.

TABLE III

PERCUTANEOUS TOXICITY STUDIES IN RABBITS

BODY WEIGHTS IN KILOGRAMS

	Animal No.	1 st Day	21 st Day	36 th Day	43 rd Day	57 th Day	71 st Day	85 th Day	92 nd Day
GROUP 1	1	1.4	1.6	2.0	2.2	3.0	2.4	2.4	2.6
	3	1.5	1.5	2.0	2.3	2.9	2.6	2.7	2.8
Ammonium	5	1.5	1.7	2.0	2.5	3.1	2.6	2.6	2.9
Thioglycolate	7	1.4	1.6	2.0	2.3	3.0	2.5	2.6	2.7
Lotion	9	1.8	2.0	2.0	2.0	2.7	2.8	2.8	3.0
	11	1.6	1.6	2.1	2.2	2.8	2.7	2.7	2.9
	13	1.4	1.8	2.0	2.4	2.2	2.4	2.6	2.7
	15	1.6	1.9	1.8	2.1	2.8	2.7	3.0	3.4
GROUP 2	2	1.4	1.8	2.6	2.8	3.3	2.8	2.9	3.3
	4	1.4	1.7	2.0	2.4	3.0	2.5	2.6	2.7
Monoethanol -	6	1.3	1.7	2.1	2.3	3.1	2.5	2.6	2.8
amine Thio-	8	1.2	1.7	2.0	2.2	3.0	2.6	2.7	2.9
glycolate Lotion	10	1.6	1.7	2.4	2.5	3.2	2.9	2.8	3.1
	12	1.7	1.8	2.6	2.6	3.2	2.8	2.9	2.9
	14	1.4	1.7	2.0	2.0	2.6	2.6	2.6	2.9
	16	1.6	1.8	2.3	2.5	3.0	2.6	2.7	3.0
AVERAGES	Group 1:	1.5	1.7	2.0	2.25	2.8	2.6	2.7	2.9
	Group 2:	1.4	1.75	2.25	2.4	3.05	2.66	2.7	2.85

The red blood cell counts and hemoglobin concentrations (Table No. 4) were within normal limits and similar in both groups, showing no significant alterations during the course of treatment.

TABLE IV

PERCUTANEOUS TOXICITY STUDIES IN RABBITS

ERYTHROCYTE COUNTS AND HEMOGLOBIN CONCENTRATIONS

		Erythrocytes - millions per cmm.			Hemoglobin - grams per 100 ml.		
GROUP 1	Animal No.	0	52nd Day	94th Day	0	52nd Day	94th Day
Ammonium	1	5.73	7.03	6.52	12.9	12.0	13.0
Thioglycolate	3	6.15	6.22	5.85	12.0	10.5	12.5
Lotion	5	7.23	6.49	5.97	11.6	10.7	10.5
	7	5.94	6.20	5.61	10.4	11.2	12.25
	9	5.40	5.21	3.75	11.1	10.0	10.0
	11	4.45	5.11	4.70	9.4	10.5	10.0
	13	7.04	5.90	5.87	11.6	10.5	8.75
	15	6.11	5.76	4.85	11.1	11.0	9.25
GROUP 2	2	6.35	6.25	4.67	11.1	11.8	11.0
	4	5.80	6.33	5.25	11.6	10.4	12.0
Monoethanolamine	6	5.96	7.04	6.75	10.2	11.8	12.0
Thioglycolate	8	5.35	6.12	5.70	10.8	11.5	11.25
Lotion	10	5.55	6.05	4.35	11.9	10.0	8.75
	12	6.20	5.19	5.65	10.9	11.5	10.5
	14	4.47	6.43	4.62	9.4	11.5	10.0
	16	6.40	7.38	5.72	10.8	12.0	10.5
AVERAGES	Group 1:	6.01	5.99	5.39	11.2	10.8	10.8
	Group 2:	5.76	6.35	5.34	10.8	11.3	10.7

The differential white cell counts (Tables 5 and 6) were lower in average percentages of neutrophils and higher in lymphocyte percentages at the end of six and twelve weeks of treatment. The changes were somewhat greater in Group 1 (the ammonium thioglycolate control). The cytoplasm

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of the neutrophils (amphophils) stained poorly and was characterized by an absence of the usual amounts of cytoplasmic granules normally seen. Duplicate slides, separately stained, were similar in appearance. Attempts to differentiate the granulocytes with the peroxidase technique were not successful.

TABLE V

PERCUTANEOUS TOXICITY STUDIES IN RABBITS

LEUKOCYTE DIFFERENTIAL COUNTS

GROUP 1	Animal No.	% Neutrophils 0	52nd Day	94th Day	% Lymphocytes 0	52nd Day	94th Day
Ammonium Thioglycolate Lotion	1	40	8	14	22	57	81
	3	31	13	9	66	82	85
	5	23	27	18	75	70	75
	7	33	3	17	63	53	78
	9	27	9	14	70	68	65
	11	21	9	13	77	88	85
	13	41	25	13	54	73	80
	15	20	19	10	74	79	92
GROUP 2	2	29	35	19	61	62	73
	4	13	7	20	85	89	74
Monoethanol-amine Thio-glycolate Lotion	6	30	16	24	66	78	72
	8	31	8	14	67	87	79
	10	12	14	25	85	79	71
	12	42	12	20	54	82	78
	14	18	21	11	77	76	87
	16	24	7	14	70	90	82
AVERAGES	Group 1:	29.5	14.1	13.5	66.4	85.5	84.0
	Group 2:	24.9	15.0	18.3	73.1	80.7	77.0

TABLE VI

PERCUTANEOUS TOXICITY STUDIES IN RABBITS

WHITE BLOOD CELL DIFFERENTIAL COUNTS

GROUP 1 Animal No.	% Monocytes 0	52nd Day	94th Day	% Eosinophils 0	52nd Day	94th Day	% Basophils 0	52nd Day	94th Day
1	5	2	4	2	2	1	1	0	0
3	2	1	4	0	0	0	1	0	0
5	0	2	5	2	1	2	0	0	0
7	2	4	4	0	0	1	2	0	0
9	0	2	1	2	0	0	1	0	0
11	0	1	1	0	2	1	2	0	0
13	0	1	4	5	1	3	0	0	0
15	1	1	3	5	1	4	0	0	1
GROUP 2									
2	5	1	6	4	2	2	1	0	0
4	0	2	5	0	1	1	2	1	0
6	3	5	2	0	1	2	1	0	0
8	2	4	7	0	1	0	0	0	0
10	3	5	1	0	2	2	0	0	0
12	2	3	1	2	1	1	0	0	0
14	1	3	2	2	0	0	2	0	0
16	2	0	2	4	0	2	0	0	0
AVERAGES									
Group 1	1.25	1.75	3.25	2.0	0.87	1.5	0.87	0	0.1
Group 2	2.25	2.87	3.32	1.5	1.0	1.25	0.75	0.1	0

No evidence of pathology was found on gross examination of the visceral organs. The heart, spleen, lung and intestinal tissues were essentially normal. The thyroids were normal with the exception of those obtained from animals numbered 11 and 16 which contained many empty follicles, but no hyperplasia, inflammation or degenerative changes. Skin sections of both groups exhibited slight variations in thickness of epithelium, but no definite pattern of atrophy. All of the liver tissues exhibited varying degrees of vacuolization, granulation and nuclear disappearance. All kidneys showed mild to moderate cellular toxic changes, most marked in animals 3 and 14. Animals number 6, 9, 13, 15 and 16 showed changes indicating the presence of a low-grade pyelonephritis. Two animals from each group, numbers 1, 5, 6, and 12, had minor degrees of toxic changes in the outer cortical cells of the adrenal

glands, with some fatty vacuolization and granularity.

In the absence of a control group, the leukocyte picture and the histopathologic findings in the livers, kidneys and adrenals should be interpreted with caution. Pyelonephritic developments are not uncommon in laboratory rabbits, and could contribute importantly to the other changes described. Rabbits of this age do not, however, usually have such a high incidence of the toxic cellular changes observed in the livers and kidneys.

Conclusions:

No differences could be demonstrated between a monoethanolamine thioglycolate lotion and a conventional ammonium thioglycolate lotion tested as a control by percutaneous administration to rabbits five days weekly for a period of twelve weeks. A minimal degree of erythema of the treated skin areas in both groups was the only local effect observed. Some histopathological evidence of systemic effects appeared in the livers, kidneys and adrenal glands, but were equally evident in both groups.

For the sake of brevity we have decided not to publish at this time the details of our own animal toxicity studies. We should certainly state, however, that our comparatively meager work led us to conclusions entirely consistent with those reached by the Hill Top investigators.

For estimating the irritant properties of a fluid cosmetic, we use extensively the method of Draize, Woodard, and Calvery[3]. These tests are easy to carry out, and yield results within a few days which permit (in our experience) fairly reliable predictions as to the primary irritant properties of the product under examination.

Table No. 7 is a reproduction of a form which we use in our animal laboratories for the grading; we find that our modest amendments of the table proposed by the authors minimize errors of recording by the technician.

TABLE VII

RABBIT OCULAR LESION STUDIES

METHOD: DRAIZE, WOODARD, AND CALVERY

	I CORNEA		II IRIS	III CONJUNCTIVA			SCORE	
Test Animal No.	A Opacity 0-4	B Area 0-4	A 0-2	A Redness 0-3	B Swelling 0-4	C Discharge 0-3	Opacity	Total
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Weighting	A x B x 5		A x 5	(A + B + C) x 2			Max 80	Max 110

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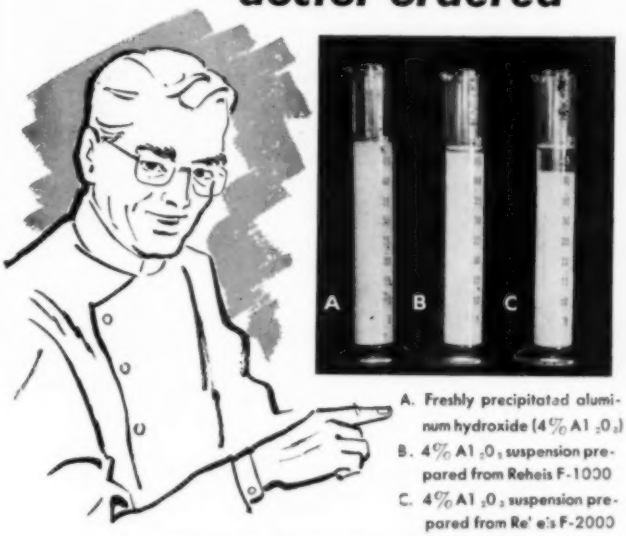

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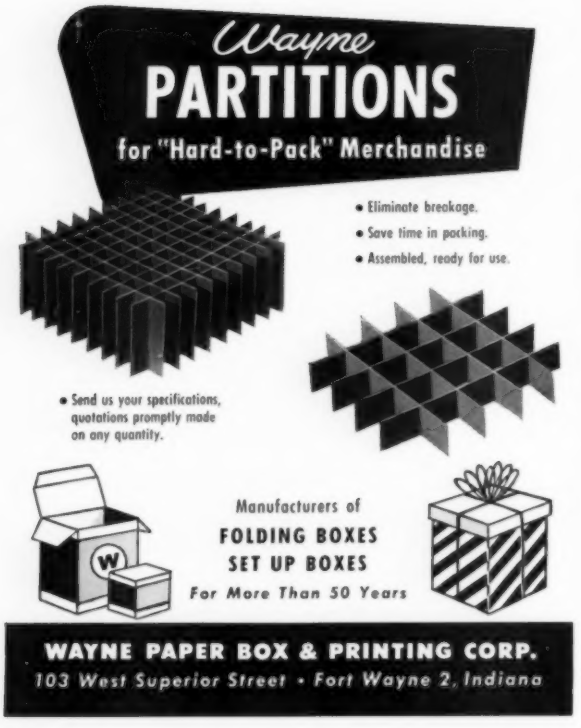
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because we have adopted the procedure recommended by Dr. Morris Shelanski of Industrial Toxicological Laboratories—discarding any animal who closes his eye *and keeps it closed* as a result of the application of the test fluid.

In this experiment 0.1 ml. of the test lotion were instilled in the lower conjunctival sac of the rabbit's eye. No subsequent rinsing was done. The monoethanolamine thioglycolate lotion tested was 0.776N (11.87 per cent) in monoethanolamine thioglycolate, 0.365N (2.23 per cent) in free monoethanolamine and contained a minor amount of wetting agent, dye, and perfume. The control was a conventional ammonium thioglycolate waving lotion which was 0.74N (8.07 per cent) in ammonium thioglycolate, 0.70N (1.19 per cent) in free ammonia above pH 7, and also contained minor quantities of wetting agent, dye, and perfume.

Tables 8, 9, and 10 show the results of these studies. From these results, we would conclude that the test lotion is significantly less irritating than is the control, but we would also predict that neither lotion would prove objectionable for regular application topically to human skin. I might point out that when ordinary shampoos are tested by this same procedure, the 24 hour readings commonly average in the range of 40 to 50. What is important here is that in all cases the opacity in the cornea is reduced to zero at the end of seven days.

Primary Irritation and Sensitization Tests Using Human Subjects

While the rabbit eye tests yield results of some significance (we feel) from the standpoint of primary irritation, they tell us nothing about possible sensitization reactions. To draw conclusions with confidence on this important aspect of the toxic properties of a product, patch tests on humans must be conducted. In our laboratories we follow the method of Draize et al[4], modifying the procedure to approximate use conditions as recommended by Brunner and Smiljanic[5].

In our first experiment we used a group of 92 people. Our test lotion was 0.92N (14.08 per cent) in monoethanolamine thioglycolate and 0.38N (2.32 per cent) in free monoethanolamine above pH 7. It also contained minor amounts of our preferred wetting agent, dye, and perfume. As a control we used a lotion that was 0.74N (8.07 per cent) in ammonium thioglycolate, 0.70N (1.19 per cent) in free ammonia above pH 7, and also contained minor amounts of a wetting agent, perfume, and dye. Each subject received two patches, the control patch on one arm and the test lotion patch on the other. The patches were left on for thirty minutes, after which they were removed and the skin was lightly rinsed with water and then blotted. Readings were made when the patches were removed, and also 24 hours afterwards. Patches were reapplied on the identical sites on alternate days until ten exposures had been made. Fourteen days later, the incubation period recommended by Dr. Draize, an additional

"challenge" patch was applied to discover possible sensitization reactions.

I should like to comment briefly on the conditions selected for this investigation. The monoethanolamine thioglycolate test lotion was chosen as being of approximately the highest strength which we thought we might be interested in producing. The control

TABLE VIII

RABBIT OCULAR LESION STUDIES

METHOD: DRAIZE, WOODARD, AND CALVERY

ONE HOUR READINGS

AMMONIUM THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	0	0	0	3	1	3	0	14
2	1	1	0	3	1	3	5	19
3	1	2	0	2	1	1	10	18
4	0	0	0	2	0	3	0	10
5	0	0	0	2	0	3	0	10
6	0	0	0	3	0	2	0	10
7	1	1	0	3	0	3	5	17
8	1	1	0	3	0	2	5	15
9	0	0	0	3	0	2	0	10
10	0	0	0	1	0	1	0	4

MONOETHANOLAMINE THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	0	0	0	1	0	2	0	6
2	0	0	0	2	0	3	0	10
3	0	0	0	2	0	1	0	6
4	0	0	0	1	0	1	0	4
5	0	0	0	1	0	1	0	4
6	0	0	0	2	0	1	0	6
7	0	0	0	1	0	1	0	4
8	0	0	0	1	0	2	0	6
9	0	0	0	1	0	1	0	4
10	0	0	0	1	0	1	0	4

TABLE IX

RABBIT OCULAR LESION STUDIES

METHOD: DRAIZE, WOODARD, AND CALVERY

TWENTY-FOUR HOUR READINGS

AMMONIUM THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	1	4	0	3	3	3	20	38
2	1	4	0	3	4	3	40	20
3	Eye closed No reading possible							
4	0	0	0	2	0	1	0	6
5	0	0	0	2	0	3	0	10
6	1	2	0	2	1	3	10	22
7	Eye closed No reading possible							
8	0	0	0	2	0	0	0	4
9	0	0	0	1	0	2	0	6
10	0	0	0	0	0	0	0	0

MONOETHANOLAMINE THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	0	0	0	0	0	0	0	0
2	0	0	0	1	0	3	0	8
3	0	0	0	1	0	0	0	2
4	0	0	0	1	0	0	0	2
5	0	0	0	0	0	1	0	2
6	0	0	0	1	0	0	0	2
7	0	0	0	0	0	0	0	0
8	0	0	0	1	0	0	0	2
9	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0

TABLE X

RABBIT OCULAR LESION STUDIES

METHOD: DRAIZE, WOODARD, AND CALVERY

SEVEN DAY READINGS

AMMONIUM THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	Eye closed No reading possible							
4	0	0	0	1	0	0	0	2
5	0	0	0	0	0	0	0	0
6	0	0	0	1	0	0	0	2
7	Eye closed No reading possible							
8	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0

MONOETHANOLAMINE THIOGLYCOLATE LOTION

Test Animal No.	I A	I B	II A	III A	III B	III C	Score Opacity	Score Total
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	1	0	0	0	2
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0

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lotion is considerably weaker than many nationally sold ammonium thioglycolate lotions. This strength

TABLE XI

SCORING USED FOR PATCH TEST IRRITATION DETERMINATIONS

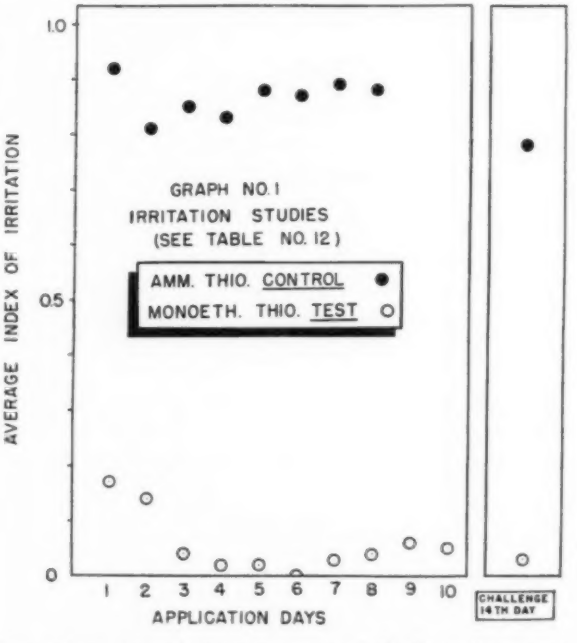
CONDITION	NUMERICAL SCORE
No evidence of irritation	0
Doubtful; epidermal exfoliation without redness, or a complaint of burning sensation	0.5
Definite erythema	1.0
Deep erythema, or slight papules without erythema	2.0
Deep erythema and papules	3.0
Erythema, papules, and edema	4.0
Vesicular reaction, or localized petechiae formation	5.0

TABLE XII

PRIMARY IRRITATION AND SENSITIZATION TESTS
30 MINUTE EXPOSURES

APPLICATION NO.	AMMONIUM THIOGLYCOLATE LOTION AV. IRR. READING	MONOETHANOLAMINE THIOGLYCOLATE LOTION AV. IRR. READING
1	.92	.17
2	.81	.14
3	.85	.04
4	.83	.02
5	.88	.02
6	.87	0
7	.89	.03
8	.88	.04
9		.06
10		.05
CHALLENGE	.78	.03

	CONTROL	TEST
No. of people tested with Patch No. 1	92	92
No. of people tested with Patch No. 8	81	91
No. of people tested with Patch No. 10	-	91
No. of people tested with challenge patch	77	89



was selected partly because we have built up in recent years extensive knowledge of the irritant and sensitiz-

ing properties of this particular ammonium thioglycolate lotion, and partly because as a result of the rabbit eye tests we were confident that even at its weaker strength it would not prove to be less irritating than the test lotion. The subjects were exposed to the test materials for thirty minutes because in the professional beauty shop processing times almost never are longer.

Our system of scoring irritation in these patch test studies is shown in Table No. 11.

Table No. 12 shows the results of the experiment just described. These are plotted on Graph No. 1. Table No. 13 and Graph No. 2 show the distribution and severities of the positive readings (occasionally one encounters a chemical which gives very few positives, but these few are so severe as to yield a reassuring low average while in fact the product would be unsatisfactory for commercial distribution). The distribution is, in this case, of very unusual interest, we

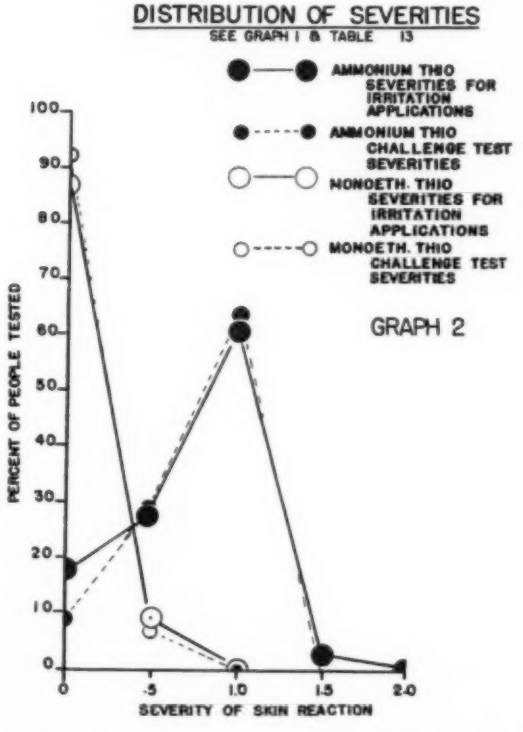
TABLE XIII

DISTRIBUTION OF SEVERITIES

PRIMARY IRRITATION AND SENSITIZATION TESTS

15 MINUTE LOTION EXPOSURE PLUS 15 MINUTE NEUTRALIZATION

Magnitude of Severity	PRIMARY IRRITATION PATCH READINGS		SENSITIZATION CHALLENGE	
	Ammonium Thioglycolate Lotion	Monoethanolamine Thioglycolate Lotion	Ammonium Thioglycolate Lotion	Monoethanolamine Thioglycolate Lotion
0	15%	89%	9%	93%
0.5	25%	10%	27%	7%
1.0	57%	1%	64%	0
1.5	2.9%	0	0	0
2.0	0.1%	0	0	0



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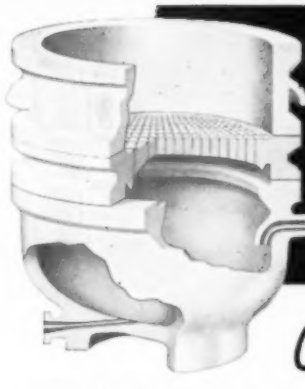

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think. It indicates that under the conditions of this test a substantial majority of the subjects exposed gave positive (slight) reactions to the ammonium thioglycolate control lotion, whereas the opposite is true of the monoethanolamine thioglycolate lotion.

I am always asked why the number of people exposed goes down as the test goes on, as appears in Table No. 12. Some people move away; some people get sick (from extraneous causes!); and *some* people object to having a patch reapplied when they have already registered even as modest a reaction as is described by a 1+ reading. Some, as is evident from the figures, are willing to be re-exposed to a product

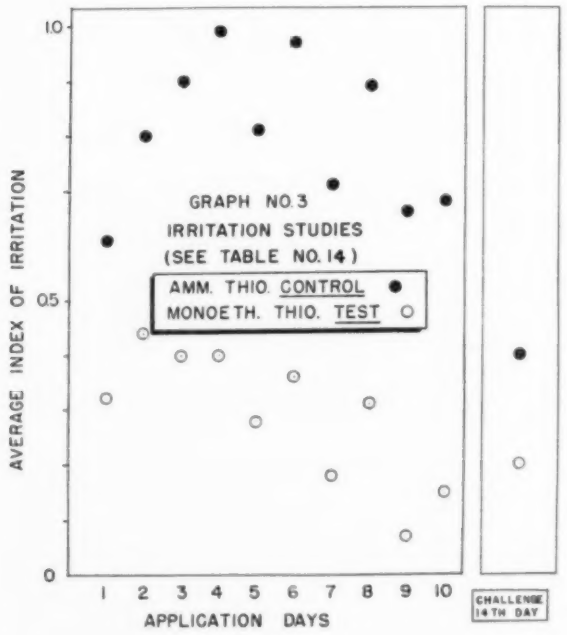

TABLE XIV

PRIMARY IRRITATION AND SENSITIZATION TESTS
15 MINUTE LOTION EXPOSURES PLUS 15 MINUTE NEUTRALIZATION

APPLICATION NO.	AMMONIUM THIOGLYCOLATE LOTION AV. IRR. READING	MONOETHANOLAMINE THIOGLYCOLATE LOTION AV. IRR. READING
1	.61	.29
2	.80	.44
3	.90	.40
4	.99	.40
5	.81	.28
6	.97	.36
7	.71	.18
8	.89	.31
9	.86	.07
10	.68	.15
CHALLENGE	.40	.20

	CONTROL	TEST
No. of people tested with Patch No. 1	47	47
No. of people tested with Patch No. 10	42	42
No. of people tested with challenge patch	36	36

that did not cause itching or smarting, but not to a product that did.

We regret very much that the last two exposures to the control cannot be reported. This defect was "due to conditions beyond our control"—although certainly not beyond our embarrassment. I can assure you, however, that we are not suppressing any unfavorable evidence, and that the absence of these figures is not misleading in any way whatsoever. The challenge patch, in the case of the ammonium thioglycolate lotion, was applied fourteen days after the last patch in the series of eight.

We have one more investigation to report. We have found that occasionally the introduction of the neutralizer can affect the irritation picture through some inter-action between certain of its ingredients and certain ingredients of the waving lotion.

A group of 47 people were tested by the following procedure. Patch tests were run on both arms as before. The patches were left on for fifteen minutes, after which they were removed, the sites were lightly rinsed with water, blotted, and then covered with a surgical sponge which had been saturated with a conventional sodium bromate neutralizer (about 15 per cent sodium bromate). Fifteen minutes later the sponges were removed, and irritation readings were made. After the readings the sites were rinsed with water, and lightly blotted.

As before, the tests were carried out every other day until ten "insults" had been made, and again after fourteen days a final challenge patch test was run.

The test lotion was 0.7N (10.71 per cent) in monoethanolamine thioglycolate, and 0.7N (4.27 per cent) in free monoethanolamine above pH 7. The control lotion was 0.7N (7.63 per cent) in ammonium thioglycolate and 0.7N (1.19 per cent) in free ammonia above pH 7. The results of this investigation are shown in Table No. 14 and plotted on Graph No. 3. The distribution of the irritation readings is shown in Table No. 15. Again, we think the comparative distributions of the positive reactions from test and control lotions are of special interest.

In both of these human patch test experiments, the 24 hour irritation readings were substantially lower

TABLE XV

DISTRIBUTION OF SEVERITIES
PRIMARY IRRITATION AND SENSITIZATION TESTS
30 MINUTES' EXPOSURE TO LOTION

Magnitude of Severity	PRIMARY IRRITATION PATCH READINGS: Ammonium Thioglycolate Lotion	PRIMARY IRRITATION PATCH READINGS: Monoethanolamine Thioglycolate Lotion	SENSITIZATION CHALLENGE: Ammonium Thioglycolate Lotion	SENSITIZATION CHALLENGE: Monoethanolamine Thioglycolate Lotion
0	18%	72%	40%	75%
0.5	37%	16%	42%	19%
1.0	40%	7%	18%	3%
1.5	5%	2%	0	3%
2.0	0	3%	0	0

than the immediate readings reported here, the control readings not being significantly different from the test lotion readings.

The authors have been permitted to examine the results of similar human patch test studies which have been carried out at the Hill Top Research Institute,

Inc. As would be expected in an independently operated laboratory, their conditions of application and their concentrations and even their grading system for reading their results differed considerably from our own.

We have decided not to publish the details of their experiments with this paper, because their findings sort exactly with ours. One interesting aspect should certainly be set down, however. They ran four different groups consisting of 28 people, 28 people, 26 people, and 26 people. One of the variables which they studied in each group was the effect on irritation of prolonging the exposure; in each group they ran both one hour and three hour exposures with monoethanolamine thioglycolate test lotions and ammonium thioglycolate lotion controls. Using a system whereby the degree of erythema was rated on a 0-10 scale, they recorded total values for one and three hour exposures to ammonium thioglycolate lotions of 43 and 131, respectively, while the corresponding values for monoethanolamine thioglycolate lotions were 25 and 92. In the individual groups, there were no reversals of this pattern, although in one case at the three hour level the monoethanolamine salt reading went up to a point only very slightly below the corresponding ammonium thioglycolate value.

These irritation readings show that while the gap closes somewhat between the test lotion and control lotion when the time of exposure is extended, at the longer times there still remains a significant difference in favor of the monoethanolamine thioglycolate lotion.

Conclusions

1. Comparative single dosage acute toxicity studies on ammonia and monoethanolamine indicate that monoethanolamine is less toxic than ammonia. The history of trouble-free use of free monoethanolamine in the amounts present in hair waving lotions over a period of many years strongly indicate the benign nature of monoethanolamine in such products.

2. The single acute dosage toxicity studies on ammonium thioglycolate lotion and monoethanolamine thioglycolate lotion yield results which appear to be quite comparable.

3. Monoethanolamine thioglycolate lotions appear to be considerably less irritating to human skin than ammonium thioglycolate lotions.

4. No sensitization reactions appear likely as a result of repeated exposure to either monoethanolamine thioglycolate or ammonium thioglycolate hair waving lotions.

In preparing this report the authors have been privileged to cull through a very considerable amount of data generously provided by others, and we have regretfully set aside much material of merit in an effort to hold this paper to reasonable length. We trust that it is not necessary to assure you that in our selection of the material to include we have been most objective, and that the total picture of the situation which we have acquired for ourselves does

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not differ in any respect at all from the picture presented here. This is indeed the case.

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ENTERIC COATING ON GRANULES

(Continued from page 332)

per one gallon of water. It was prepared by heating the water almost to the boiling point, adding the granulated sugar, and then stirring the mixture until the sugar was completely dissolved. The syrup was then heated to boiling and strained through muslin. A number of applications of syrup and precipitated chalk were made to completely cover the granules. The granules were weighed again to determine the amount of subcoating added. Finally, the three enteric coating solutions were applied as outlined previously.

Disintegration of the Granules.—Disintegration tests were carried out in vitro using the following equipment: An electric motor was fitted with a suitable speed reduction as prescribed by the official test. Instead of the basket-rack assembly specified by the U.S.P. XIV, test tubes containing the granules and artificial gastric or artificial intestinal juice were placed in a wooden carriage in a horizontal position and immersed in a constant temperature bath. This apparatus was attached by a chain to an electric motor which imparted an oscillating action on the carriage containing the test tubes. (See photograph 1.) Since the test tubes were in a horizontal position, the granules moved back and forth without actually touching either end. This continual motion permitted the granules to be bathed in sufficient volume of fluid to cause disintegration. The end point of the disintegration test was taken when the granules began to fall apart. During the testing, the temperature of the bath was kept between 35 and 39° C. and the speed of the motor between 28 and 32 cycles per minute.

The advantages of this method of testing the disintegration time of granules over the official U.S.P. XIV test are: (a) the small granules can be much more easily observed in the test tubes without having to interrupt the testing, (b) the granules are kept in continual motion while in contact with artificial gastric fluid or artificial intestinal fluid to produce reproducible results. See photograph 2 for complete disintegration test assembly.

The artificial gastric and intestinal juices used in the disintegration tests were those found most satisfactory in a recent study by Brindamour and DeKay[24].

Artificial Gastric Juice		Artificial Intestinal Juice	
NaCl	2.0 Gm.	Pancreatin	10.0 Gm.
Pepsin N.F.	3.2 Gm.	$CaCl_2$ 1:100 soln.	10.0 cc.
HCl U.S.P.	2.5 cc.	M/5 K_2HPO_4	250.0 cc.
Dist. Water q.s. ad	1000.0 cc.	M/5 NaOH	118.0 cc.
		Ox bile ext.	4.0 Gm.
		Dist. Water q.s. ad	1000.0 cc.

Addition of the enzymes to each solution was made just prior to use.

Two batches of sodium bicarbonate granules were prepared. The processes of granulation, coating and disintegration were the same for both batches.

Coating the sodium bicarbonate granules was of little or no value in delaying their disintegration time. The medicine dissolved out of the shell coat in a relatively short time.

Two batches of aluminum hydroxide granules were prepared. After testing these granules in artificial gastric juice, the granules were placed in artificial intestinal juice. The results are listed in table I.

Table I
DISINTEGRATION OF COATED ALUMINUM HYDROXIDE GRANULES

Coating	Amount of Coating (a)	Amount of Coating (b)	Artificial Gastric Juice (a)	Artificial Gastric Juice (b)	Artificial Intestinal Juice (a)	Artificial Intestinal Juice (b)
Cellulose acetate phthalate	3.9 per cent	3.4 per cent	Granules intact after 5½ hours		32-42 min.	
Arsenic-free shellac	3.7 per cent	3.4 per cent	Granules intact after 5½ hours		80-100 min.	
Arsenic-free shellac-castor oil	3.2 per cent	3.6 per cent	Granules intact after 5½ hours		90-140 min.	

Table I shows that all three enteric coatings produced a delay in disintegration time long enough to satisfy the requirements for an enteric coating. The cellulose acetate phthalate coating dissolved completely in artificial intestinal juice in a short time; however, the shellac and shellac-castor oil coatings dissolved slowly, and disintegration of these coated granules occurred before the coating had completely dissolved. Thus, it was difficult to determine the exact time of disintegration of these granules even through they could be easily observed during the testing.

The results obtained in the disintegration tests of subcoated sodium bicarbonate granules showed no appreciable difference in disintegration time of sodium bicarbonate granules by the application of a subcoat.

Discussion of Results

It is readily apparent that the solubility of the medicaments is a factor in the disintegration rate of coated granules. Therefore, a representative of both soluble and insoluble medicaments was selected.

Coating water-soluble medicaments such as sodium bicarbonate was of little or no value in delaying the disintegration time. This is in agreement with the results obtained in a previous study by Gagnon, DeKay and Lee[23], where lactose was used as the soluble medicament. The application of three different enteric coatings to aluminum hydroxide granules produced a delay in disintegration time long enough to satisfy the requirements for an enteric coating. Similar results were reported by Gagnon, DeKay and Lee[23], when these same three coatings were applied to granules

consisting of 90 parts of aspirin and 10 parts of starch.

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The assistance of Leighton Maiden in building the disintegration apparatus is gratefully acknowledged.

CAPLESS SQUEEZE TUBE FOR ONE-TIME USE

(Continued from page 339)

point pressure for the dispensing seal, which should have a slightly slower "open-up" for liquids than for a heavier substance like Nupercainal. The tests proved that Saran, known for its high resistance to the transmission of aromatics, would completely protect the perfume's scent.

Each sample consists of two dispensers containing "Adam's Rib" placed in a folding carton on which is printed promotional copy for the perfume.

Other manufacturers not in the perfume field have recognized the value these small containers of perfume would have as gifts to customers, with the company name embossed on the container itself or printed along with a sales message on a folding carton in which the container of perfume could be tucked.

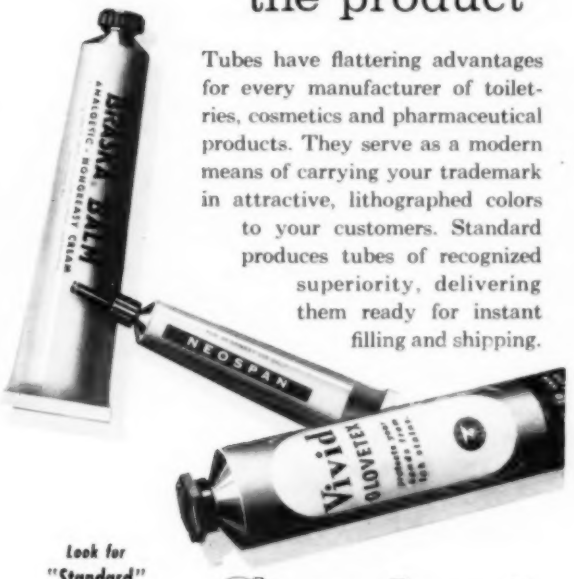
Union Carbide Co. is providing its Pyrofax dealers with Lentheric's Tweed perfume in a Unette dispenser inserted into a matchbook shaped folder. The cover of the folder identifies the name of the perfume and the back reads, "Courtesy Your Pyrofax Distributor."

Sears Roebuck, Inc. uses a similar device in which to distribute Chansonette perfume to customers at store openings and special occasions.

These perfumes are all packaged in a slight variation of the Unette dispenser called the Touchette applicator, which has a cotton cap affixed to the dispensing end to absorb the perfume as it is expelled from the tube. In the case of liquids which are applied by rubbing or "daubing" on, Touchette provides an ideal applicator as well as container.

E. R. Squibb & Sons Division has recently started

tubes that flatter the product



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packaging alcohol in Touchette applicators for distribution to doctors, who, when giving injections appreciate the convenience of being able to grab a Touchette, squeeze it and immediately apply the alcohol from the same container.

Cortland Laboratories in Los Angeles is using the same kind of applicator containing alcohol as part of a tie-in with blood donation programs.

Unette dispensers can be packaged in a variety of ways, depending on how the product contained in them will be distributed and sold. Some of the possibilities are the previously mentioned slide-and-shell paperboard mailers and folders for small quantities of dispensers or cardboard boxes, plastic containers and styrofoam platforms for greater quantities.

For easier storage and use, Unette dispensers can be strung together by tape, which is attached to the bottom of the tubes. The containers can then be "plucked" individually from the tape as needed. Tape comes in widths from 5/8 in. to one in. in a variety of colors and can be printed on both sides.

DETERMINING CONSUMER ACCEPTANCE

(Continued from page 343)

varies sharply by product lines. The general principles, however, are applicable to all types of products:

1. Through *Market Research*, seek out logical buyers of your new products. This demands up-to-the-minute research about what kind of people, living where, buy your current products, where they are purchased, who within a family or a buying group makes the selection, how the products are used, and in what way your products fail to give satisfaction.

   Good market research will reveal the same type of vital information about the use and acceptance of your competitors' current products as it does about your own.
2. Through *Motivation Research*, find out—
   a. What brings people into the market for products of your type.
   b. What appeals make people decide on one make or brand over another.
3. Through *Pretesting of Design* ideas determine--
   a. What appearance features have maximum appeal to your most logical prospects.
   b. What operating features are most desired.
   c. What combination of appearance and operating features have maximum appeal in each price range.

      Depending on the product group, design ideas can often be submitted for consumer judgment through sketches, models or scale models.
   d. Isolate the factor of design for evaluation from other factors that have a bearing on the actual selection of your product.

      Many potent factors other than design are operative at the point of purchase:

      Availability
      Maneuvers of competition
      Quality and quantity of dealer activity
      Effectiveness of display, advertising and sales promotion
      Brand prestige.

      To improve product design over a period of years, manufacturers, through research, must find exact ways to appraise the real effect of design itself, over and above the scramble of other factors at work in product selection by the consumer.

What do modern Americans with their changing habits and customs want? What do they think is beautiful and useful and represents a good value?

Your great challenge as managers of one of our most creative industries is, through research, to find out more and more about the psychology of acceptance. Only then can you lead and anticipate consumer demand. And only by leading and anticipating can you survive in today's highly competitive scene. Trial and error methods of testing the market are costly and inefficient. Scientific pretesting can take some of the risk out of bringing highly acceptable new products into being.

RECENT PATENTS

(Continued from page 357)

2,746,972—**Abbott Labs.—Thiophene-2-Carboxaldehyde Thiosemicarboxylic acid.**

2,746,975—**Olin Mathieson—Basic Esters and Amides of 5, 6-Dihydro-4H-Pyran-3-Carboxylic Acid.**

2,746,978—**Upjohn — Cortisone, 21-Beta-Cyclopentyl Propionate.**

2,746,992—**Hoffmann-La Roche—Dialkylaminoalkyl-Diphenylacetanilides.**

2,748,052—**A. Rosner — Therapeutically Active Compositions Containing Amphetamine.**

2,748,116—**G. D. Searle—Arycycloalkyloxyalkylamines.**

2,748,117,8—**Ciba—Quinoxalinium Salts.**

2,748,119,24—**G. D. Searle—Pyrimidines.**

2,748,126,8—**Burroughs Wellcome—Piperazines.**

2,748,135—**Eli Lilly—Pyridoxine Intermediates.**

2,748,142—**A/S Sadolin & Holmblad (Denmark)—N-Hydroxy Pyridones.**

2,748,147—**A/S Sadolin & Holmblad—2, 5 - Dialkoxy-3,4-Dihydroxytesrahydrofurans.**

2,748,148—**Miles Labs. — N - Carbamyl Glycidamides.**

2,748,149—**Organon—Etiocholanic Acid Derivatives.**

2,748,150—**G. D. Searle — 10, 13 - Dimethyl - 17 -**

Acetyl - Perhydro - 15H - Cyclopenta[a] Phenanthrene-2, 3-Dione.

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2,749,274—Bristol Labs.—Stable Aqueous Procaine Penicillin Suspension.

2,749,275—Clinical Research Found.—Therapeutic Composition of 3, 4-Dihydroxy Phenyl Ethylamine and Methylating Agent.

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2,749,338—Merck—Isoallospirostanes.

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2,749,342—R. Auchincloss—Heterocyclic N-Adducts.

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2,749,334,5—Burroughs Wellcome—Pyrimidines.

2,749,346—Ciba—Tetrahydropyridines.

2,749,347—Chemo Puro — 2 - Phenylquinoline - 3-Aryl Carbamates.

2,749,353—Eli Lilly—Substituted Benz CD Indolines.

2,749,361—Olin Mathieson—Cyclohexanecarboxamides.

2,750,325—Eli Lilly — Injectable Erythromycin Prepn.

2,750,326,7—Lever Bros.—Hair Dyeing Process & Composition.

2,750,365—Hercules Powder—1, 2, 3, 4, 4a, 9, 10, 10a - Octahydro - 9 - Hydroxyl - 1 - Hydroxymethyl - 7 - Isopropenyl - 1, 4a - Dimethylphenanthrene.

2,750,373—G. D. Searle—Aralkanoyl and Aralkenoyl Derivatives of Podocarpic Acid Esters.

2,750,379—Am. Home Products—Imidazolidine Salts of Penicillin.

2,750,380—G. D. Searle—20-Pyridyl-5, 16-Pregnadien-3, 20-Diols.

2,750,381—Upjohn—Steroid Alkali-Metal Enolates.

2,750,382—G. D. Searle—Basic Esters of 1,12-Dimethyl-6-Alkoxy-1, 2, 3, 4, 9, 10, 11, 12-Octahydrophenanthrene-1-Carboxylic Acids.

2,750,383—Am. Cyanamid—Acyl Derivatives of 3, 3-Dimethyl Piperazinedione.

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2,750,428—Chas. Pfizer—Hypnotics.

2,750,947—Northwestern Research Corp.—Hair

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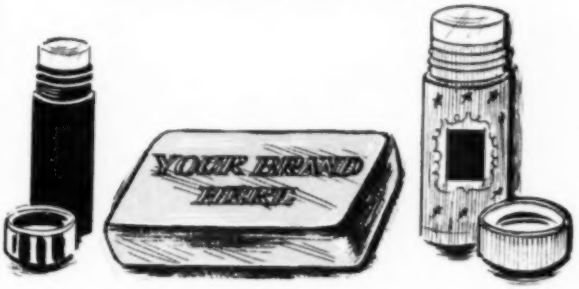

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2,751,329,30—**Armour — Pancreatic Enzymes Prepn.**
2,751,343—**Upjohn—α-Ketocarboxylic Acid Esters Prepn.**
2,751,378—**Bristol Labs.—Benzylpenicillin Thio Acid.**
2,751,379—**Syntex S.A. — Steroidal 11α - Hydroxy Compounds Prepn.**
2,751,380,1—**Upjohn—Steroids.**
2,751,382—**Cilag (Switzerland) — Chemotherapeutic Sulfones.**
2,751,392—**Geschickter Fund for Medical Research—Tertiary Amine Derivs. of N-and O-Saccharin.**
2,751,393—**Geigy—Imidazoline Derivs. of Aryl Indoles.**
2,751,395—**May & Baker (England)—Isomeric Nitro-1-Phenyl Pyrazoles.**
2,751,396—**Eli Lilly—Substituted Benz [CD] Indolines.**
2,751,397, -399, -400—**Upjohn—Pregnenes Reduction.**
2,751,398—**Glaxo Labs. (England)—Monoenolesterification at the 20-Position of 11, 20-Allopregnane-Diones.**
2,751,401—**Upjohn — 4 - Chloropregnane - 17α, 21-Diol-3, 11, 20-Trione and 21-Esters Thereof.**
2,751,402—**Upjohn—Oxidation of Hydrocortisone Esters to C Cortisone Esters.**
2,751,410-2—**Cutter Labs. — 3 - Phenylsalicylamides.**
2,751,413—**Parke, Davis—Dichloracetamido Nitrophenylhydroxy-propanal.**
2,752,284—**Ortho Pharm. Corp. — Spermicidal Compn.**
2,752,286—**Armour—Extraction of Insulin from Pancreas Tissue.**
2,752,335—**Upjohn — Aluminum - Penicillin - Sulfa Salts.**
2,752,337,8—**Upjohn—Steroid Amines.**
2,752,339—**Glidden—Cortisone Prepn.**
2,752,340—**Farbwerke Hoechst Akt.—Prepn. of 16. 17-Oxido-Pregnenes.**
2,752,341—**Upjohn—Steroid Haloketones.**
2,752,342—**Ed. Geistlich Sohne (Switzerland)—Intestinal Disinfectants Prepn.**
2,752,345—**Cassella Farbwerke — Gentisic Acid Salts of Aminoalkylphenthiazines.**
2,752,348—**Takeda Pharm. Industries (Japan)—Vitamin B_1 Derivatives.**
2,752,351—**E. Schlittler & J. Mueller—Crystalline Reserpine.**
2,752,352—**Heyden Pharmacal Co.—Beta-Ketonic Acid Ester Derivatives.**
2,752,355—**O. Lustig—Nicotinamide Prepn.**
2,752,359—**Chas. Pfizer—Acylated Pyrrothines.**
2,752,365,9—**Upjohn—Steroids.**
2,752,370—**Schering—Δ^{16}-20 Keto Steroids from 16-Substituted-20-Keto Steroids.**
2,752,371—**Upjohn—3β-Pregnanol-11, 20-Dione.**
2,752,372—**Organon—3, 14, 21-Trihydroxy Pregnanediones (11, 20).**
2,752,385—**G. D. Searle—Quat. Ammonium Salts of Alkyl (Hydroxyalkyl) Aminoalkyl Benzilates.**
2,752,390—**G. D. Searle—1, 5-Diphydroxynaphthaline Keto Alkanoic Acids.**
2,753,266—**Merck—Penicillin Feed.**
2,753,288—**Upjohn — Scopolamine Lower - Alkyl Oral Therapeutic Composition.**
2,753,289—**U. S. A.—Microbiological Synthesis of Vitamin B^{12} Active Substances.**
2,753,290—**Olin Mathieson—Microbiological Production of 7- and 15-Hydroxy-Progesterones.**
2,753,291—**Am. Cyanamid — Streptodornase - Streptokinase Purification.**
2,753,340—**Eli Lilly—Maleate Salts of Protoveratrine A and B.**
2,753,341—**G. D. Searle — 17 - Pyridineacrylyl - 5-Androsten-3-Ols.**
2,753,342—**Syntex S.A. — Cyclopentanophenanthrenes.**
2,753,343—**G. D. Searle—Maleic Anhydride Adducts of $\Delta^{16,17}$ Steroids.**
2,753,347,8—**Merck—Dihydroorotic Acid.**
2,753,351—**Dr. Karl Thomae, G.m.b.H.—4, 4'-Dioxy-Diphenyl-Quinolyl-Methanes.**
2,753,352,3—**Olin Mathieson—Isonicotinic Acid Hydrazide Derivatives.**
2,753,354—**Chas. Pfizer — Isonicotinoylaminoviguanide.**
2,753,357—**G. D. Searle—Lactones of 1, 12-Dimethyl-6, 10-Dihydroxy-9-Oxo-1, 2, 3, 4, 9, 10, 11, 12 - Octahydrophenanthrene - 1 - Carboxylic Acid.**
2,753,359—**G. D. Searle—Naphthiofluorene Carboxylic Acids.**
2,753,360—**Schering (Germany)—Esters of 17α-Hydroxyprogesterone.**
2,753,361—**G. D. Searle—17-Thio-5-Androstene-3-Ols.**
2,752,363—**B. Winer—Making Soap of Low Moisture Content.**
2,753,374—**Gen. Aniline—1-Benzyl-3-β-Hydroxyethyl-2-Thiourea.**
2,754,295—**Bristol Labs.—Streptomycin Purification.**
2,754,296—**Schi-Wa Chemisch-Pharmazeutische —Antihistaminic Compound.**

(Continued from page 319)

In the first formula, the aqueous aluminum salt solution is heated to 60 to 65° C. and the alcohol and propylene glycol slowly added with agitation and added heat to maintain the temperature. The sodium stearate is added with stirring until the soap dissolves. The perfume is finally added and, after thorough mixing, the solution is poured into molds.

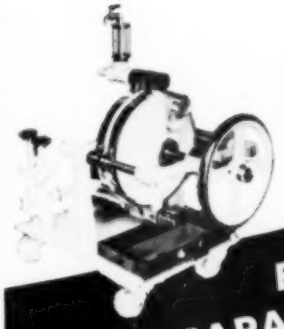
In the second mixture, with sodium stearate formed in situ, the stearic acid is dissolved in the warmed alcohol, the sodium hydroxide is dissolved in the water and the alkali solution is added to the aluminum complex solution. The aqueous solution is heated to 65 to 70° C. and the alcoholic solution at about the same temperature is added with stirring. The formation of the soap takes place rapidly and after slight cooling the perfume is mixed in and the solution poured into molds. There is little or no difference in result if the alcoholic solution is added to the aqueous or vice versa, but stearic acid must be dissolved in the alcohol and the alkali in water.

The proportions between alcohol and the aluminum complex solution must be maintained within fairly narrow limits. If larger proportions of alcohol are used, there may be permanent turbidity, which affects the appearance of the stick adversely. Concentrations beyond this may cause actual precipitation of the complex. Slight turbidity may be removed by the addition of a little water, but here again the suggested compositions include about as much water as they can take, larger amounts giving soft, mushy preparations.

Glycerin or propylene glycol may be used in the formulas interchangeably and no incompatibilities were encountered by using larger proportions of these humectants and plasticizers. Again, more is not necessarily better than just enough, excessive proportions of the humectant making the film slower drying and somewhat sticky.

Sodium stearate, used as such or made in situ, can vary from 5.5 grams for a wet, slipping stick to 7.5 grams for hard ones. The simple rule of 284 grams of stearic acid to 40 grams of sodium hydroxide in making sodium stearate is not a safe substitute for exact analytical control. Equivalent weights should be determined analytically and combination should be made with the stearic acid in very slight excess to prevent the pH value from rising too far, while too great an excess of the fatty acid will reduce transparency.

Perfumes used in these sticks should be compounded with due regard not only for the slightly alkaline character of the preparation, but also for the presence of the aluminum complex. Finally, as the manufacturer may desire, it is possible to include active bacteriostatic agents, in the mixture. Here again, it is necessary to ascertain compatibility with other ingredients and freedom from undesirable effects on the skin.



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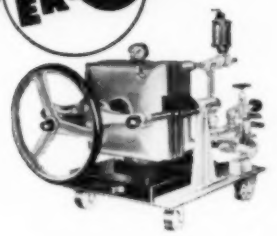

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oxime, [illegible]
Palladium [illegible], Palladous
Aldehyde, Palmitoleic Acid, Palmitoyl Chlori
[illegible], Pant
[illegible]
Pectinolytic Enzymes, Pellidol, [illegible]
Pentaacetyl-d-glucononitrile, [illegible]
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